

Railway Age Gazette

PUBLISHED EVERY FRIDAY AND DAILY EIGHT TIMES IN JUNE BY THE
SIMMONS-BOARDMAN PUBLISHING COMPANY
WOOLWORTH BUILDING, NEW YORK

CHICAGO: Transportation Bldg. CLEVELAND: Citizens' Bldg.
LONDON: Queen Anne's Chambers, Westminster

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Subscriptions, including 52 regular weekly issues and special daily editions published from time to time in New York, or in places other than New York, payable in advance and postage free:

United States and Mexico.....	\$5.00
Canada	6.00
Foreign Countries (excepting daily editions).....	8.00
Single Copies.....	15 cents each

Engineering and Maintenance of Way Edition and four Maintenance of Way Convention daily issues, North America, \$1; foreign, \$2.

Entered at the Post Office at New York, N. Y., as mail matter of the second class.

WE GUARANTEE, that of this issue 8,750 copies were printed; that of these 8,750 copies 7,392 were mailed to regular paid subscribers to the weekly edition, 250 were provided for counter and news companies' sales, 1,041 were mailed to advertisers, exchanges and correspondents, and 67 were provided for samples and office use; that the total copies printed this year to date were 54,900, an average of 9,150 copies a week.

The RAILWAY AGE GAZETTE and all other Simmons-Boardman publications are members of the Audit Bureau of Circulations.

VOLUME 58

FEBRUARY 5, 1915

NUMBER 6

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*Illustrated.

That the railroads of America have 49 masters—one at Washington and one at each of 48 state capitals—is an observation which, as a vague generality, is very familiar. Mr. Hustis, president of the State Commissions' Divergent Views Boston & Maine, has had occasion to consider the fact in the concrete. Speaking before the Massachusetts Public Service Commission in Boston the other day, which commission has suspended the road's new passenger tariffs raising all fares to 2½ cents a mile, he said that similar tariffs, filed at the same time, had been approved in Maine, New Hampshire, Vermont and New York, and by the Interstate Commerce Commission. There is state sovereignty with a vengeance! That careful observer who said that most of our state commissioners are "con-

spicuously deficient" in some of the essential qualifications needed in commissionerships may not have been precisely accurate in his statement; but that our system as a whole is conspicuously efficient, in blocking the wheels of business, is quite apparent in many places. The four states mentioned may have many interests which are diverse; but the general fact that most passenger fares are too low is true of all of them. It was only a few months ago that the commissioners of five states met in Massachusetts, with Federal Commissioner Prouty, and a statement was given out endorsing the view that passenger fares generally were too low; but that was only theory; now we have practice. Mr. Prouty is in Washington, five hundred miles away, but the fact that some Massachusetts citizens will have to pay a little more money for fare is right under the commissioners' noses. In Philadelphia, where the people were aroused recently by an advance in fares, one of the most conservative papers, one which supports the general proposition that the railroads need more money, quickly brought up the doctrine that freight traffic may rightfully bear a part of the burden of the passenger service. The Interstate Commerce Commission, supporting the doctrine that each branch of the traffic should bear its own burdens, will need to get a louder trumpet, if it is to prevail.

The Pennsylvania's annual report for 1914 does not come out until March, but the preliminary figures for December and for the calendar year ended December 31 for all the Pennsylvania lines were given out on Monday of this week. It was the Pennsylvania Railroad itself and the Pennsylvania Company (northwest system of the lines west) which were particularly hard hit. Total operating revenues for all Pennsylvania lines, both east and west, amounted to \$353,239,000 in the 1914 calendar year, a decrease from the previous year of \$37,823,000, or 12 per cent. Total operating expenses amounted to \$287,090,000, a decrease of \$32,597,000, or 13 per cent. The very heavy cut in expenses prevented a seriously smaller net revenue, the net in 1914 being \$66,149,000, or \$5,226,000 less than the previous year. The saving in expenses was about equally divided between transportation expenses and maintenance expenses. On the Pennsylvania Railroad a saving of \$7,158,000 was made in maintenance and \$6,000,000 in transportation; on the southwest system, \$5,157,000 in maintenance and \$4,258,000 in transportation. The Pan Handle—the Pittsburgh, Cincinnati, Chicago & St. Louis—suffering proportionately with the other lines in loss of revenue, succeeded in making even deeper proportionate cuts in expenses, the saving in maintenance being \$4,149,000 and in transportation \$2,531,000. Maintenance costs do not decrease in anything like the ratio of loss of freight business. The Pennsylvania's figures, therefore, quite surely show deferred maintenance. This means just that much more material and supplies used in maintenance to be bought as soon as increased earnings warrant it.

The Railway Business Association recently has issued a bulletin regarding "The Deadly Toll of Trespass on Railways," which has forcibly brought up this subject for public attention again. As its bulletin shows, over 50,000 trespassers on railway property are killed every 10 years in this country, this being more than one-half of all the fatalities on our railways; and this long death roll is due to the fact that the governments will not pass and enforce laws to suppress the evil. The railways have sought such action year after year, but in vain. Why will not the legislatures do something? An address made by J. A. Culp, at the meeting of the Illinois Legislative Board of the Brotherhood of Locomotive Firemen and Enginemen, held at Springfield, Ill., on September 28, 29 and 30, 1914, throws light on this question. We quote

Railway Employees and the Trespass Slaughter

the following from Mr. Culp's remarks, as published by the brotherhood's legislative board:

Trespassing. That was another bill that was a very innocent looking bill. Prevented trespassing of anyone upon the company's property, and provided a heavy fine and imprisonment. If the boys would "walk out" and go down to the roundhouse or on the company's property and one of the fly cops would see you, they could send you to jail from thirty days to six months, and fine you anywhere from \$1 up. So that bill didn't look good to us and we killed it, and one of the senators told us, "You boys could come down here and ask to have the rails nickel-plated on the railroads and we would do it for you, but when the railroad company asks for a little bill like that you boys object to it." And why shouldn't we?

Was ever a more cynical and outrageous statement made? Because some of the "boys" might possibly get arrested, while on strike and out of the railway's service, good and vitally-needed legislation must be defeated, and 5,000 men and women must be killed each year. And the same legislative board was daily button-holing members of the legislature for train crew and other similar legislation in the alleged interest of "safety" on railways! "You boys," said the senator quoted by Mr. Culp, "could come down here and ask to have the rails nickel-plated on the railroads, and we would do it for you, but when the railroad companies ask for a little bill like that you boys object to it." And Culp's comment is: "And why shouldn't we?" "The public be d—," one of the Vanderbilts is reported to have said. And likewise the spokesman of the railway brotherhoods say: "Sure! to h— with the public, and law, and order, and good government, and the safety of human lives, rather than that there should be any possible police interference with us!"

A "PRIVATE" MANAGER FOR GERMAN RAILWAYS

A CABLEGRAM from Berlin announces that Herr Ballin, director-general of the Hamburg-American Steamship Company, has been placed in charge of the operation of all the railways of Germany. This is an extraordinarily interesting and significant piece of news. A large majority of the railway mileage of Germany is owned and managed by the governments of the various states. The state railways of Germany, especially those of Prussia, are recognized by every intelligent student of the subject as the best managed government railways in the world. If it should be assumed that anywhere there could be found a state railway system which had developed officers and an organization that would be able to cope with any situation or emergency, every student of the subject would say that the state railway system of Prussia was that system. And yet, in the crucial test to which the state railways of Prussia and the other German states are being put by the great war, the government passes over the heads of all the men in its civil service, in its army and in its navy, and takes for the manager of the railways during the war the head of a great private company.

The German Hamburg-American Steamship Company, however it may have been subsidized and encouraged by the government, is a private enterprise which has been developed and managed on commercial principles by private business men. The Hamburg-American is the greatest and best managed steamship line in the world, and Herr Ballin in its management has demonstrated the possession of those qualities of foresight, initiative, enterprise, resourcefulness and driving power which are the great essentials to success in all practical affairs. It is doubtless because he has demonstrated their possession that he, rather than some man developed in the Prussian civil service, has been selected to manage the railways. Is it possible that these qualities cannot be developed to the highest degree even in a civil service like that of Germany? If so, how can they be expected to be developed in the civil service of any other nation?

One of the many arguments that have been used in favor of government ownership of railways is that of military expediency; yet, in this great crisis it has been found a matter of military expediency and necessity to go outside of the government railways and get a private business man to run them. Highly significant also was the frank acknowledgment made

by Colonel Goethals in his address before the Chicago Engineers' Club last week of his indebtedness to the railway engineers, John F. Wallace and John F. Stevens, who preceded him on the Panama canal. Without the organization and construction methods which they had worked out and which he inherited, his labors, Colonel Goethals said, would have been unsuccessful. This statement illustrates the bigness of Colonel Goethals, and it also tends to nullify the arguments in favor of government ownership which have been based on his success in building the canal.

UNEMPLOYMENT ON RAILROADS

NEVER has the problem of unemployment been brought more forcibly to the notice of the people of the United States, or been given greater attention by the more intelligent of them, than during the present winter. In every part of the country thousands, and even hundreds of thousands, of men and women have been unable to get work. Some of them are undeserving; but a very large majority are honest and industrious people who are willing and able, and whose failure to get anything to do has not been attributable to any fault of their own. They are victims of industrial and economic conditions which they have had practically no part in producing.

The situation this winter has been especially bad. But the problem presented is not a new or ephemeral one. There is chronically too much unemployment in this country. Its result is an amount of mental and physical suffering and degradation which cannot be contemplated by any intelligent and humane person without the deepest commiseration for the victims, or profound misgivings regarding the future of the nation. Unemployment, aside from the immediate suffering it causes, is an inevitable and prolific breeder of industrial and social unrest. The more intelligent and prosperous classes should co-operate in investigating its causes and remedies, and in applying the latter. If they do not the condition is quite certain to be attributed to wrong causes and to be attacked by people whose intentions are good, but who are ignorant, or by demagogues who are ignorant, but whose intentions are not good, with remedies that will aggravate the disease or engender others.

The course of events in the railway business from season to season and period to period is one of the most prolific of all causes of unemployment in the United States. Because of the desire of the managements to make a good paper showing on roads which are financially in bad shape it is a common thing to postpone needed maintenance work until after the ending of the fiscal year on June 30, and then to plunge into it vigorously to make up for lost time. This causes a wide fluctuation in the demand of the railways for unskilled labor, and furthermore, causes a large increase in their demand just at the time when there is a maximum demand for such labor on farms. The economic disadvantages of this to both labor and employers, as well as to the public in general, are evident. If the railways generally would begin their maintenance work earlier in the year the reduction in the fluctuations in the demand for unskilled labor, and the improvement in respect to seasonal unemployment would be considerable.

Again, in those months of the year when the weather is warmest, the days are longest, and all other conditions are most favorable for railway operation, the freight traffic is comparatively light and there is a reduction in the number of men employed in connection with train operation. On the other hand, when the season of short days and severe weather comes and conditions become most unfavorable for railway operation, coal, lumber, grain and other kinds of bulky freight are poured on the railways in a flood, and there is a large increase in their demand for employees directly concerned in the movement of trains. The only way to reduce the fluctuations in the number of employees produced by this cause is to mitigate the cause by regularizing the movement of traffic. There is no good reason why so much of the coal and lumber, for example, should move in

the fall and winter. The movement of such commodities in the spring and summer could be increased, and the movement of them in the fall and winter reduced, by co-operation between the railways, the shippers, the consignees and the consumers.

Far worse in their effects than the seasonal fluctuations in the demand for labor are the fluctuations in the demand for it from year to year and period to period. How great these are may be illustrated by the following statistics showing the number of men employed on June 30 of the years from 1902 to 1913, inclusive:

1902.....1,189,315	1908.....1,436,275
1903.....1,312,537	1909.....1,502,823
1904.....1,296,121	1910.....1,699,420
1905.....1,382,196	1911.....1,669,809
1906.....1,521,355	1912.....1,716,380
1907.....1,672,074	1913.....1,815,239

It is probable that on June 30, 1914, the number did not exceed 1,650,000, and on December 1, 1914, there may have been 250,000 fewer employees on our railways than there were 18 months before.

While the change between 1913 and 1914 was big, it was not without precedent, for between 1905 and 1906, it will be noted, there was an increase in the number of employees of 140,000, while between 1907 and 1908 there was a reduction of 236,000; and variations upward or downward of 100,000 in a year are not uncommon. In other words, variations between the numbers employed by railways in two successive years amounting to from 6 to 15 per cent have occurred constantly within the last 15 years.

These fluctuations from year to year in the number of employees on railways have been due to correspondingly great fluctuations from year to year in traffic and earnings. But is there any good reason why the number of employees should vary in proportion to earnings and expenses? Improvements can be made more economically in years of bad business than in years of good, and if the policy of making them then were adopted the extent of unemployment in the bad years would be greatly reduced. The reason why most railways make improvements in the good years and do not make them in the bad ones is that they do business on such a narrow margin of profit that it is only in the good years that they have the financial means with which to make improvements. If they were allowed to earn larger surpluses in the good years to carry over to the bad ones they would be able to make more improvements in the latter and the fluctuations in the number of employees could be greatly reduced.

The policy of the labor brotherhoods aggravates the situation. Most of them insist on provisions in the wage schedules requiring the managements to give regular employees a minimum number of days' work in each month. The result is that when it is necessary for the roads to reduce their forces they must give this minimum number of days' work per month to the employees that they retain, which makes it necessary to lay off many employees entirely. If agreements could be made between the railways and the brotherhoods that in such bad times as the present the railways could give a smaller number of days' work to each employee, it would be possible to retain a larger number on the payroll, although each of those kept on the payroll would work a smaller number of days per month, and therefore earn a smaller average in a month than is the case under existing arrangements. Instead of the entire loss and suffering falling on some, it would then be divided among practically all, and the results would be far less bad.

While much attention is now being given to the problem of unemployment, business conditions doubtless will soon improve and the situation will then become less aggravated. It is greatly to be feared that when this turn for the better comes, the problem will again be neglected. But business will become poor again, and if, while it is good, nothing is done to solve the problem, the situation will again recur. It is to be hoped, therefore, that no effort will be spared to bring about co-operation and concerted action by public officials, economists, employers and labor organizations in reference to this most seri-

ous matter. As the condition of seasonal and periodical unemployment is met with in such aggravated form in the railway industry, it is to be hoped that special efforts to deal with it will be made by railway managers and the railway brotherhoods. It has been demonstrated that the managements and the employees can co-operate whole-heartedly and effectively in the interests of "safety first." Cannot similar methods and a like spirit be developed to deal with unemployment?

THREE-CYLINDER LOCOMOTIVES

IN speaking at the annual meeting of the American Society of Mechanical Engineers in December last, J. B. Ennis, chief mechanical engineer of the American Locomotive Company, dwelt on the possibilities of the use of three cylinders in overcoming some of the difficulties that have developed with the large dimensions which the American locomotive has reached. Mr. Ennis' remarks on this subject were published on page 123 of our issue of January 22, 1915. J. Snowden Bell, in a paper on the three-cylinder locomotive, read at the 1913 convention of the American Railway Master Mechanics' Association, brought out the possibilities of the increase in power to be obtained by the use of this type, as well as the greatly improved balancing conditions. This latter feature is of particular importance, when we consider the high wheel loads in use on modern locomotives and the added effect on the rail pressure caused by the conditions obtaining in counterbalancing.

A great deal of progress has been made within the past two or three years toward reducing the weight of reciprocating parts by means of careful designing and the use of heat-treated and alloy steels. Unquestionably more can still be accomplished along these lines, tending toward improved balancing in the two-cylinder locomotive, but there is a limit to the possibilities of improved counterbalancing when the two-cylinder type is retained. As stated by Mr. Ennis, the power obtained in a two-cylinder engine having cylinders 27 in. in diameter and a maximum piston thrust of 117,000 lb., can be obtained in a three-cylinder engine with cylinders 22 in. in diameter and a maximum piston thrust of 78,000 lb. This is a decrease in piston thrust of 33 per cent and permits a corresponding reduction in the weight of the individual parts of the machinery, but particularly in the reciprocating parts. Neglecting, then, the fact that the three-cylinder arrangement gives an almost ideal balancing condition, it will be seen that considerable improvement is possible because of the reduced weight of the reciprocating parts alone.

The greatest objection raised against the three-cylinder locomotive is the necessity of the employment of a crank axle; and where simplicity of construction and ease of inspection and maintenance are given the prominence that they receive in American railway practice, such an objection is serious. There are crank axles in considerable number in regular service on American railways, principally on four-cylinder balanced compounds, but all things considered, it cannot be said that they give entire satisfaction. The dangers of failure in an axle of this type are greatly increased over those of the plain axle and the conditions which might develop from such a failure, particularly on a four-cylinder engine where there are two inside connected main rods, need no enlarging upon to bring out the seriousness of the accident that might result. While the same arguments apply to the crank axle for a three-cylinder locomotive, they do not do so to the same extent because of the fact that in this type there is but one main rod inside connected, and the designer has, therefore, much broader limitations to which he can work.

With the increase in the amount of radiating surface with the use of the three-cylinder arrangement there would undoubtedly be an increase in the amount of condensation. Just what effect this would have on the steam consumption is problematical, but it does not seem unreasonable to expect, in a three-cylinder locomotive, some increase in steam consumption over a two-cylinder locomotive of equivalent power. The use of a superheater, however, would probably overcome this. All things

considered, the crank axle seems to offer the main objection to the adaptation of the three-cylinder locomotive to American practice, but the ability and courage characteristic of American designers, which have developed and perfected the Mallet compound, the superheater and the mechanical stoker should also be capable of producing a satisfactory crank axle. The three-cylinder locomotives which have been in service on the Philadelphia & Reading for some years, have, on the whole, done excellent work, and have proved satisfactory in many respects; and the application of this principle to a large Pacific or Mikado type locomotive would make it possible to determine just how valuable this type of locomotive could be made in American railway service and would also be watched with considerable interest.

SOME RECORD-BREAKING CONSTRUCTION PROJECTS

It is somewhat anomalous that records should be broken in the magnitude of construction projects under conditions causing extreme financial depression, such as those that have prevailed in the transportation industry in recent years, and reached their culmination, it is to be hoped, at the outbreak of the European war. The effects of universal retrenchment, as reflected in reduction in mileage of new lines completed last year, tend to overshadow the record-breaking work now under way or recently completed. It may therefore be of interest to recall a number of such instances.

Doubtless the best known of the projects under way which are establishing precedents is the Quebec bridge, which is to carry the new National Transcontinental Railway over the St. Lawrence river, about seven miles above the city of Quebec. As will be recalled, the length of the main span in this structure, 1,800 ft., is 100 ft. greater than that in the Firth of Forth bridge in Scotland, which now has the distinction of having the longest span in the world.

Second in interest only to the Quebec bridge is the 1,000-ft. steel arch of the New York Connecting Railway over Hell Gate in the East river, New York City. The longest span of this type now in service is the highway bridge crossing the Niagara river, about 1,000 ft. below the falls, which has a length of 840 ft. The contrast between this structure, notable as it is, and the new Hell Gate arch is emphasized when it is remembered that the latter will carry a four-track railroad on a concrete ballasted deck. The magnitude of the entire project of which this crossing forms a part makes it unusual in new railway construction.

In the revision of old lines, which has become increasingly common as the volume of traffic has increased, it is impossible to compare projects as accurately as in the case of bridges, but in respect to cost, character of work and importance of the improvement, it is probable that two of the cut-offs now under construction surpass all previous work of this kind. These are the Baltimore & Ohio Magnolia cut-off between Orleans Road, W. Va., and Little Cacapon, one track of which was placed in service December 6, 1914, and the Delaware, Lackawanna & Western Summit cut-off between Clark's Summit, Pa., and Hallstead, which will be finished next summer. The former is 12 miles long and on the average each mile will cost \$500,000, require the handling of nearly 300,000 cu. yd. of material and the placing of 6,000 cu. yd. of concrete. The latter is 40 miles long, its cost is estimated at \$300,000 per mile, and the earthwork and concrete yardages are 336,000 and 10,000 per mile, respectively. The Baltimore & Ohio line is double-tracked, while the Lackawanna is for three tracks, with the exception of two short sections. The Lackawanna cut-off includes one six-mile section, costing \$4,000,000, in which is located the Tunkhannock viaduct, described elsewhere in this issue. This reinforced concrete structure will have a greater total yardage, length and height than any of similar design, although the 180-ft. spans, while long, are not of record length. The concrete yardage is 167,000, the length 2,375 ft., and the height 300 ft. from bottom of foundation to top of coping.

The above work is all located in the east, but the west is not lacking in projects of nearly, if not quite, equal interest. For instance, the largest freight classification yard in the country, and therefore in the world, is now being completed at Chicago. Clearing yard has a standing capacity of 12,400 cars, a handling capacity of 10,000 cars per day and direct connections to two belt lines, intersecting every one of the 24 trunk line roads entering the city. On the lower Ohio and Mississippi rivers two big bridges are being constructed, one at Metropolis, Ill., by the Chicago, Burlington & Quincy and the Nashville, Chattanooga & St. Louis, and one at Memphis, Tenn., for the Chicago, Rock Island & Pacific, the St. Louis, Iron Mountain & Southern, and the St. Louis Southwestern. While these will not establish new records for size, they are of unusual length. Work on the former is temporarily postponed, and on the latter the substructure has just been completed.

In the far west the Snake river steel viaduct of the Oregon-Washington Railroad & Navigation Company, placed in service late last summer, is notable as to height and length, being second only to the Lethbridge viaduct of the Canadian Pacific in the combination of these dimensions. The length of the new structure is 3,920 ft. and the base of rail is 270 ft. above low water. Records in tunneling have also been broken by a western project, the Canadian Pacific five-mile tunnel at Rogers Pass, B. C. This is 1,400 ft. longer than the longest railway tunnel in America at present, the Hoosac tunnel of the Boston & Maine. The work had not progressed far in driving the heading of the pioneer tunnel from which the main bore is being excavated, when the world's record for progress in driving was broken, and subsequently the contractors bettered their early performance in this respect, completing an average of 27 ft. per day at one face for the last two months.

NEW BOOKS

Drake's Telephone Handbook. By D. P. Moreton. 286 pages, 4 1/4 in. by 6 1/2 in. Illustrated. Bound in cloth. Published by Frederick J. Drake & Co., Chicago. Price \$1.

This book is described on the title page as "a book for the practical man"; and it appears to be very full and satisfactory in the scientific and theoretical field as well. The author is associate professor of electrical engineering in the Armour Institute of Technology, and the work gives evidence not only of his ability as a writer, but of his practical acquaintance with the subjects on which he writes. The circuits of the Bell Telephone Company are described, with drawings. Any telephone maintenance employee, whether indoor or outdoor, will find the details of his work dealt with in great fullness.

Installing Efficiency Methods. By C. E. Knoeppel. 258 pages, 6 3/4 in. by 10 in. Illustrated. Bound in cloth. Published by the Engineering Magazine, 140 Nassau street, New York. Price \$3.

There have been so many books published within recent years dealing with the principles of scientific management, that when a new one is brought out it arouses but little interest. In this book, however, Mr. Knoeppel endeavors to avoid the matter of a mere declaration of principles and tells what the methods are that are known to increase the efficiency of a manufacturing plant and also how they are put into use. The introduction to the book states that the purpose has been to give wholly frank and thoroughly practical working instructions and explanations, covering the entirety of efficiency practice as tested and proved in many important and successful undertakings carried out by the author, and this purpose, it would seem, has been carried out. As originally prepared, the material in the book appeared in a series of articles published in the Engineering Magazine during 1914, but this is expanded and changed to a considerable extent in this volume. The chapter on the efficiency clearing house has been considerably enlarged and chapters added on costs and on auxiliary devices for the planning department. A considerable number of charts, diagrams and illustrations have also been added.

Letters to the Editor

DESPATCHERS' CHANCES OF PROMOTION

TO THE EDITOR OF THE RAILWAY AGE GAZETTE: NEW YORK.

I have been reading the letter in your issue of January 29 signed W. S. Hobbs, taking issue with an earlier correspondent in regard to the question whether or not train despatchers are getting a square deal in the matter of promotion nowadays. It seems to me that neither Mr. Hobbs, nor the Editor, in his note subjoined to the letter, gives a satisfactory answer to the despatcher who complains that he is overlooked when competent men are wanted for higher positions in the operating department. It is true, as you say, that a large number of managing officers now in active service began their careers as telegraphers and worked for considerable periods as train despatchers; but the trouble is that, so far as present day problems are concerned, these facts do not throw much light on the question. These general managers, presidents and other officers who presided at the train sheet did so from twenty to forty years ago. May it not be that quite radical changes have taken place since those days? It is a well-recognized fact that civil engineers are better appreciated by railroad presidents now than they were twenty years ago, and this appreciation leads to their more frequent promotion. The same is in some measure true in regard to mechanical engineers. Quite likely, also, the average traffic officer is a bigger man now than was the average traffic officer of 1890, and if that is the case the traffic officer deserves more consideration in the matter of promotion than he did at that time. An extreme view would be that in former years the despatcher had better chances than he deserved: the college educated men were at that time not adequately appreciated.

However this may be, it is plain that today the fact is, and there is no unfairness about it, that the despatcher, as suggested in your editorial, must take his chances with other men who have done well in their respective departments and who aspire to be all-around railroad experts. The despatcher, being at the superintendent's side, has the first chance, but not the only chance.

E. N. H.

RAILWAY CREDIT

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

CHICAGO, ILL.

It is to be regretted that the value of John E. Oldham's analysis of the "relation that should obtain between gross earnings and various kinds of outgo for satisfactory (railway) credit," in your issue of January 15, is impaired by the inclusion of other (non-operating) income in his computations. When he says, "As charges and dividends must come from the current yearly earnings of a property, the surplus must also come from this source as surely as must the payments for current operation of the property," he places the problem that confronts the railways on its only safe basis. This makes the inclusion of "other income" in the fund available for fixed charges, dividends and surplus surprising and confusing.

Surely as eminent a banker as Mr. Oldham knows that the "other income" that figures so prominently in railway statistics comes mostly from interest and dividends paid from one railway treasury into another. Thus the dividends of the Lake Shore & Michigan Southern went to swell the fund out of which the New York Central paid its interest and dividends.

Let me illustrate the point I wish to make by presenting Mr. Oldham's figures comparing the relation of the named items, per \$100,000 earned, for the period 1900-1909 and 1913 for the

19 dividend-paying roads he names, adding thereto figures for the same roads in 1914 and omitting "other income."

	Ten-year period— 1900-1909	1913	1914
Gross earnings	\$100,000	\$100,000	\$100,000
Cost of service	67,406	74,300	75,200
Available for capital.....	32,600	25,700	24,800
Other income	4,200	6,600	.....
Total available for capital...	36,800	32,300	24,800
Fixed charges	16,300	14,200	11,000
Dividends	10,900	12,000	12,600
Surplus	9,600	6,100	1,200

Here it will be seen that the balance for surplus has dwindled almost to the vanishing point. This would be alarming save for the fact that both fixed charges and dividends are unduly swelled by duplications, mostly through stock ownership. On the other hand, a sum equal to \$2,800 per \$100,000 of gross earnings should be added to the fixed charges for the capital item of rental for leased lines. This, however, would have necessitated a distribution of a larger sum than was available for capital.

The items as they stand represent a return of 3.82 per cent on the funded debt of the roads represented and 5.98 on capital stock—both figures being more or less fictitious.

The true relation of earnings to outgo of these 19 railways is best revealed by the third line of the table, \$32.60 out of every \$100 earned available for capital, reserves and surplus, for the 10-year period to 1909; \$25.70 in 1913 and \$24.80 in 1914. Thirty dollars is the line of safety and security for the average American road.

There are facts behind these figures that have a definite bearing on railway credit. As a result of the disproportionate "cost of service" in 1914 no less than 7 of the 19 railways selected by Mr. Oldham had to draw on surplus to meet their capital demands, and only 4 of them appropriated anything out of current income for additions and betterments.

Mr. Oldham's interesting paper would have been more enlightening as to the railway situation in the United States had it included the ninety-and-nine other roads that hew wood and carry water for the American people and declare no dividends, as well as the favorably situated 19 that do. The problem of railway credit is a vast one which is not to be judged by dividend-paying samples any more than by the unfortunate examples in receivers' hands.

SLASON THOMPSON.

THE TRAIN DESPATCHER—WHO HAS NO GRIEVANCE COMMITTEE

WHITEFISH, MONT.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

More consideration should be given to the train despatcher. The methods used by some managements are often discouraging. Occasionally a young despatcher, who has within himself the making of a good man, is curtly dismissed for some error or delay which did not result in hazard, and he loses confidence in himself and is timid about taking hold of another job.

There are more changes in despatchers' forces on western roads than on eastern lines, in proportion to the number of men employed. Some of these vacancies are caused by promotions, but more generally by despatchers resigning to go to another company in the same capacity. But quite often this is a jump from the frying pan into the fire, and then as soon as another situation can be secured there is another change.

To certain offices in the western states the sobriquet of "a boomer job" has become attached. Few of the railroads west of the Mississippi river promote operators to be despatchers, and will hire as despatchers only experienced men. Eastern roads, as a rule, employ the direct opposite of this and "make their own men."

Certain of the western roads have learned at last that it costs much money in the long run to be changing despatchers so frequently, and have, of late, become more disposed to encourage men in the telegraph department to look forward to promotion. That they are having success in this method is shown by the fact that there are less changes in their despatching forces than

formerly. The newly promoted man is working with his might and main to make good. He accepts advice from his superior officers more readily than the average "old head." And, in most cases, these new men do make good.

The trainmen and enginemen have their labor organizations, and when a member of those organizations is disciplined, a grievance committee waits upon the superintendent, whether the man disciplined was in the right or in the wrong. Train dispatchers have an organization for the exchange of ideas as to the best methods of train despatching, which enjoys a considerable membership of prominent railroad officers; but if a dispatcher is discharged, he has no redress and no grievance committee to take up his case. In some cases the dismissed employee may take the matter up with the general superintendent, the general manager or the vice-president, in the order named, if he thinks he has been unjustly disciplined. In the majority of cases, however, a discharge is final, the higher officers taking it for granted that the discharging officer exercised good judgment. But many dispatchers are dismissed from the service on account of some serious delay to trains, and, apparently, division officers receive less criticism from their higher-ups when they advise that "the dispatcher responsible for the delay has been dismissed" than if they undertake to explain the delay and keep the man in service.

Trick dispatchers often feel that they are being imposed upon, or nagged, through the practices of chief dispatchers, in some offices, of taking exception to every trivial delay. Quite often a meet is a "stand-off," and one or the other of the trains must suffer a little delay; or some unforeseen complication arises and breaks up the "combination" and things "go all to pieces," through no fault of the train dispatcher. The majority of train dispatchers do not object to answering "bullets" or "torpedoes," as we call them, relative to legitimate delays, but when a man finds three or four notes awaiting him every day as he goes on duty, it tends to create a feeling of unrest and dissatisfaction. If the dispatcher knows that he did the best that anybody could have done under the circumstances, and that it was not "poor work" upon his part that caused the delays, he has a grievance which it takes a long time to obliterate.

A dispatcher, like a switchman, can get as much money in one job as another, and if he feels he is being "nagged" on one job, he begins to look around for another opening. Occasionally an absolutely first-class train dispatcher runs into a "bunch of hard luck" for which he is not responsible. Those in position above him should guard against hasty judgment of a man's work in a case of that kind.

A certain general superintendent of a western road, who had several divisions under his supervision (and who has not risen from the ranks), had considerable mileage upon which the telegraph offices were few and far between. There were a couple of fast passenger trains over his district, and the dispatchers had strict instructions to avoid "saw-bys" with these particular trains. The trick men would "stake 'em out" (meaning the freight trains), so there would not be two at the same place for either one of those fast trains; but occasionally something would go wrong, and a "saw-by" would ensue which would result in more or less delay to one of those fast trains. This general superintendent, seeing the delay upon his morning reports, would wire the division superintendent: "Fire the dispatcher who sawed No. —." This general superintendent was a very strong-minded man; and the superintendents would rather hire a new man than fight to keep the dispatcher whom the general superintendent had held responsible for delay. Dispatchers changed so often in the offices in that district that it became hard to get new men to take the places, the dispatchers who left advising their friends that they were "boomer jobs," and that nobody stayed in them. A new man would, naturally, hesitate to enter into service under the supervision of that officer. Afterwards, that general superintendent was promoted to a higher capacity, and a division superintendent, who had been a dispatcher himself for many years, took his place; and almost from the first day

conditions in that district began to improve; and, today, you will find no more loyal bunch of train dispatchers anywhere than are working on that district.

No matter how careful the dispatcher may be, nor how far ahead he may figure, he will sometimes slip up, and overlook the need of issuing instructions to a train to do certain work; or may put out a "bum" order; but whether the bad results are small or great that man is usually conscious of his error the moment it occurs, and it stings him to the core. His own conscience and judgment sting more than a "butterfly" or a chief dispatcher's note, and he profits by his mistake.

Trick dispatchers should be under the control of the superintendent, rather than of the trainmaster or chief dispatcher, though reporting, of course, to the chief train dispatcher. A new dispatcher should be approved by the superintendent before being hired, and only the superintendent should finally discharge a train dispatcher.

The superintendent should take a personal interest in his dispatchers. The opinion is rapidly spreading that the person who issues train orders should be authorized to sign them with his own signature. The superintendents' and the train dispatchers' associations will recommend to the American Railway Association, in their report upon the proposed revision of the Standard Code, that the train dispatcher issuing the train-order be authorized to do so over his own initials. Several large railways adopted this practice some time since, and it is found that the dispatcher's greater pride in his work and increased sense of responsibility render him more ambitious to excel in the performance of his duties. The orders are the product of his brain, and no other. And, as Mr. Forman points out in his recent letter in the *Railway Age Gazette*, it would save considerable trouble in searching old records to find who authorized a certain order. Further, their names should be printed on the Time Tables, as is done now by certain lines. This tends to make a dispatcher feel that he is, in a way, an officer of the company, which he is; and he should be thus recognized.

Where possible, every train dispatcher should spend at least two days out on the road, every month, without loss of pay. He should ride the way-freights. Their frequent stops would allow him time to look around and familiarize himself with the location of every station, train-order signal, interlocking plant, sidings, industry tracks, etc.

It is the custom with a few roads to give their dispatchers annual passes over the system, and one in favor of wife and children good over the division. Dispatchers always appreciate little courtesies like this, and it cements the feeling of loyalty to the management. Some other lines give their dispatchers only trip passes, either for personal or company business, and those men feel tied down. . . . Passes in favor of train dispatchers and their immediate family should not be restricted to certain trains, unless the excluded trains are excess fare trains. The passes in favor of the dispatchers themselves should be also endorsed "Good on Engines and Parlor Cars." I understand one southern road also includes the privilege of employees' rate in dining cars.

In conclusion, I wish to repeat that many a young man who starts out with a highly optimistic outlook as a train dispatcher is often discouraged during his earlier years by sharp or sarcastic criticism on the part of those in position above him; whereas, if dealt with kindly and with a little patience, he would reward his superiors by doing high-grade work.

WILLIAM E. WATTS,
Train Dispatcher, Great Northern Railway.

NIGERIAN RAILWAY.—The line was opened to Bukuru on the Bauchi Light Railway section on December 10 for passengers and freight. A through train from Zaria to Bukuru, 140 miles, will be run in connection with the main line boat from Iddo, on which a dining car will also be provided so that passengers need take nothing with them after arrival at Zaria.

Tendencies Toward Inefficiency in Legislation*

Legislatures Neither Refrain from Passing Doubtful Statutes Nor Make Adequate Investigation of Them

BY ROBERTS WALKER

Criticism and rejection of eastern views are sure to be voiced by Oklahomans. But do not misunderstand me: there is no fundamental basis for differences of opinion, as between New York and the Southwest. Our points of view are, today, not the same. Yours may be better than ours. It is certainly as much fresher, as ours is older. But in time the two will become not greatly dissimilar. You are making some experiments that we might well copy. From our successful experiments you can borrow and have borrowed much of value. And our failures have taught you what to avoid. For example, New York still has on its statute books a law, whereof the legislative purpose remains an utter mystery, prohibiting billiard tables on steamboats. Oklahoma, being better versed in elementary physics, can be relied on never to reproduce this attempt to make a misdemeanor out of what no sane man would think of doing.

INEFFICACY OF STATUTES

We need not pause to philosophize upon that trait of mankind which reposes so implicit and childlike trust upon legislative enactments. History teems with examples of this unreasoning faith. Yet it is our commonest experience that laws are not self-enforcing; that the courts emasculate many of them; that the legislatures repeal or alter many others; and that the great popular will prevents many another from ever being enforced. Prohibition only partly prohibits; a tax law does well if it collects a tithe; and the oldest profession continues to recruit its excommunicated priestesses in spite of savage statutes seeking its total destruction.

There are, however, certain realms wherein statutes are efficacious, and always enforceable if not too obnoxious. It is a familiar tenet of comparative jurisprudence that it is alike easier to pass and easier to enforce laws dealing with commercial transactions than laws governing domestic relations. Instead of a uniform divorce law—so obvious a need in our 48 states—we remain almost exactly where we began: in South Carolina even the legislature may not sunder whom God hath joined, while in Nevada (at least until recently) divorce was included among the stop-over privileges on your railroad ticket. In sharp contrast is the steady progress made by the standard negotiable instruments law, sales act and bills of lading law through the various legislatures. These and others exemplify the area within which statutory regulation may be at once efficacious and efficient, namely, the area of commerce, including many, if not all, of the functions of production, distribution and consumption.

But the very feasibility of enacting laws to regulate business has resulted in the obscuration of the proper aims and limits of such legislation. Like joy-riders, we forget the safety of passengers and pedestrians and exult only in the speed and the ease of operating the machine. The warning upraised hand of the traffic policeman is needed on the legislative speedway. For the common welfare, conviction of mistakes must be brought home to the voters and their representatives. Once given the evidence, cannot the voters be trusted? Witness the recent crushing defeat by referendum in Missouri of what is charitably described as the full-crew law, and more accurately characterized as the law to compel railroad companies to pay men for riding around doing nothing.

To a few, then, of the current legislative practices that tend toward inefficiency or even disaster, your attention is now directed.

WORKMEN'S COMPENSATION LAWS

Some novelist once said that while there are two ways to begin a chronicle, neither way relieves you from telling your whole story. One gambit is to start with John Applegreen in 1660, recount his ancestry, surroundings and descendants, and arrive, 200 years later, at the characters of your tale. The other way starts thus: "Good riddance!" yelled Roger Stone, as he kicked his grandmother out of the third-story window." This latter method catches the attention quicker, but necessitates going back to explain the earlier history of the Stone family and why Roger could feel so gratified at hurting his grandame through space.

Our American legislatures vastly prefer this second method. Time and again has vehement retaliatory legislation been enacted to meet current clamor, only to have its incompleteness become almost instantly apparent, thus requiring the addition of sub-structure and side-bearings, until the statute became relatively coherent and equitable. The intolerable spoliatory granger legislation had its valuable residuum in the establishment of principles for the control of public service corporations, based, in theory at least, on the mutual and interdependent relations between the public and the utilities.

And hence, is it not pertinent for us to inquire: Are we not now in the earliest or vindictive stage of employer's liability and workmen's compensation legislation? With most of us, I am sure the answer will be "yes." In a land where, thank God! workmen have more initiative and intelligence than anywhere else on earth, and because whereof the defenses of contributory negligence, assumption of risk and fellow service were at first (and in many a trade still would be) abstractly equitable and right, we have at a stroke of the governor's pen stricken down those defenses and have given the employer what in return? Nothing; absolutely nothing! Nay more, we do worse; we abolish the whole question of fault, fix a scale of prices for casualties *per se*, and send the whole bill to the employer. The propriety of charging the product with some portion of the cost of industrial accidents is not here discussed. But it is a most obviously proper question whether it was just or even defensible to free the worker from all the consequences of his own acts and saddle his employer with the whole burden. The instant result is that the employer passes that same burden on to the consumer, if he can, and thus the worker may blunder *ad libitum*, knowing that the consumer foots the bill.

Such legislation is inefficient for at least three reasons: (1) It demoralizes the worker by depriving him of his last reason for being careful; (2) it forces the employer, by physical examination and other tests, to cull out many men otherwise unexceptionable; and (3), it necessitates all the "safety first" methods, which the rich, large employers can install, but which the less fortunate manufacturers and contractors can supply only with difficulty, if at all, thus adding to the oligarchical power of wealth by hampering or even obliterating the small producers. How infinitely fairer it would be to treat this subject in its entirety; to include sick benefits and pensions for old age and incapacitation, to create an insurance fund to carry the load in a given trade so that a run of bad luck would not sink a single employer, and to have not only master but employees pay premiums to sustain this fund, the workmen's share in the premium to be greater for sickness and pensions, the employer's portion to be greater for casualties. This is no imaginary scheme that I am so roughly sketching; Germany has had it in use for over 30 years. Nor are excuses offered because it is socialistic. Granted that it is, what less can be said of the present workmen's compensation acts?

*From an address before the Oklahoma Bar Association, December 28, 1914.

The whole idea of making commerce carry directly, instead of in haphazard man-to-man fashion, the cost of industrial accidents is intrinsically socialistic. My plea is that, being embarked upon this economic adventure, we should master and apply *all* the precepts of such manoeuvres.

It is regrettable, also, that the passage of such lop-sided, jug-handled laws of employers' liability and workmen's compensation cannot fail to have a demoralizing effect on the laborer class. They are bound to conclude that their voting power, or the fear of their using it, can get them further largesse from the state. Thus pauperized and morally debilitated, they become a genuine risk. It is for the highest welfare of society that all grades of endeavor be constantly invigorated and incited. Any contrary tendency is a menace. Unless we manage workmen's compensation with more comprehensive wisdom, the present inefficient laws will fester into cancerous growths requiring extensive and painful surgery.

LIMITATIONS OF GOVERNMENT BY COMMISSIONS

For many years I have been on the point of writing an essay to be entitled "Democracy and Taxidermy," to revolve around the one and only inviolable principle recognized by the executive and the judicial branches of our federal government, namely: "We will not skin any skunks for Congress." In our unique three-headed form of government, the temptation to "pass the buck" is all but irresistible. Congress passes a law fixing hours of labor for railroad telegraphers, but giving the Interstate Commerce Commission power to suspend its operation for cause shown. The commission, despite due cause shown, recalls that it knew some laboring men itself once, detects a mephitic aroma in this delegation of congressional power, declines to flay the varmint, and flays the petitioning railroads instead! Again, the Sherman law is enacted by a Republican Congress anxious to glorify competition and denounce monopoly, always provided that the former must not become so energetic as to result in the latter. These benevolent intentions are expressed in nice, plain, inclusive copy-book language. Do the courts whittle down this sweeping import, even though every dictate of horse-sense would justify them in so doing? They do not. Instead, they vie with one another in squeezing situations into the scope of the act, perhaps in the hope of persuading Congress that the "eloquently silent" little animal ought to be skinned, but by Congress itself. Then, as if alarmed at possible results to flow from these interpretations, the Supreme Court devised the "rule of reason," telling us, however, what *doesn't* fall within it, not what *does*. Congress has now enacted another such statute, containing the words "to substantially lessen competition." And do I not detect, in that word "substantially," a pretty kitten-like creature with lovely black fur and a white stripe down its back? 'Pears like I do. At any rate, keep your eye on that word "substantially" for the next few years.

This sailing on the River of Doubt as a faunal naturalist is so entertaining that I am loth to step ashore. But let's discuss some defects in reposing too great reliance upon commissions.

Confronted with a problem of regulation of a complicated subject, there are only two practical courses for a legislature to pursue: either to refrain from passing a statute, or to have the subject exhaustively investigated by a committee and to pass a statute based on its findings. Legislatures are too prone to do neither, but to borrow or adapt a statute from some other state or nation and create a commission to carry it into effect. Whereupon some three or five or seven men, perhaps without experience in or peculiar qualifications for the subject matter, are plunged into a maze of detail under an ill-digested statute and left to work out their own salvation and the public's. The inevitable results are delay, confusion, mistakes, abuse of power—in a word, inefficiency. I know one state commission which requires papers on security issues to be filed with it at least three weeks before it acts. The papers are a rehash of the corporation's own periodical figures; the commission's decision is a simple yes or no. Any experienced banker's clerk could reach a de-

cision over night, deciding moreover what the commission does not decide, to wit, the *price* the securities should bring.

With the abstruse and diversified problems of gas, trolley, electric light and power, steam railroad and other utilities and their rates, services and stock and bond issues, the commission soon finds itself unequal to its task and cries for a larger appropriation. Because this is a democracy, wherein lots of jobs are preferred to real expertism, a larger appropriation means only more clerks, most of them unskilled, few of them capable of becoming experts, all of the developed experts subject to hire at better pay by private enterprises as soon as their qualifications become manifest. Then ensues administration by clerks. Even that would not be completely bad, if the other fellow ran his business by clerks; but he doesn't. He hires the best men he can afford and plenty of them. Not alone the utilities employ wide-awake experts, but so do the large shippers, the chambers of commerce, the boosters' clubs and all the other agencies that propound or incite cases for the commissions to decide. With the great number of these utilities, the ramifications of their services and the questions agitated by all these ingenious intellects, the commissions and their clerks are utterly unable to keep abreast.

In the nature of things, the Interstate Commerce Commission is so great an offender that the state commission seems almost blameless by sheer force of contrast. The commissioners themselves, most of whom I hold in high and affectionate regard, are not to be held wholly responsible; much of their difficulty arises from the magnitude of their task and from the failure of Congress to insist upon and provide funds for a competent staff of experts.

Clerks sift evidence and compose many rulings. And the worst of the matter is that the commission is nowhere near caught up with its work. The country has recently had proof of the time consumed upon a transcendently important subject. What the public does *not* know is how other matters, fully as important to the participants, drag their weary way along. And, let me repeat, such faults are not entirely the commissions'. In the last analysis, the responsibility is upon the legislature or Congress for improvidently overloading a small group of ill-paid men with duties that they could not humanly perform, even if provided, which is not the case with an adequate staff and ample funds. Indeed, we ought not to admit that a commission may further delegate its powers. The maxim *delegatus non potest delegare* is as stern upon the legislative as upon the judicial side. The summary of the whole subject must be that the legislature should never endow a commission with authorities impossible of vigorous and effective exercise.

DISREGARDING GROSS INCOME

On December 19 the newspapers state that Secretaries McAdoo and Redfield are to investigate the rise of ocean freights since the European war broke out. From personal knowledge I foretell that they will report increases all the way from 50 per cent to 200 per cent. And the reason is plain. These rates have merely responded to the inexorable compulsion of the law of supply and demand.

Now contrast shipping with railroads. Here was a huge, instant emergency. It arose July 30. Not till December 16 was any measure of relief even promised, and then only to a small extent and with patent hesitation.

All the statutes affecting public utilities must be held up to the light. Scarce one of them will stand the test of reciprocal justice to the securityholders, as well as to the shippers. Our entire fabric of regulative law (excepting possibly the laws governing banks) proceeds on the theorem that expenses may be piled up indefinitely to meet the needs or policies of the times, but that revenues must not increase unless a narrow, difficult, tedious and technical demonstration shall first have been made. The alternative, on the revenue side, is to leave the matter to free and unrestricted competition, of the sort those stalwart Republicans fit, bled and drew their salaries for on July 2, 1890.

Neither method can succeed when used conjointly with regulation—meaning thereby *increase*—of operating costs.

In railroads, our process has been the same as in coal mining. I need not bore you with a list, as long as Homer's list of the ships, of statutes that have added to the cost of railroad operation. Yet the Interstate Commerce Commission asks Congress for more. Its annual report (December 10, 1914) begs for these laws:

Compulsory use of steel passenger train cars;
Penalties for violating hours-of-service act;
Control of railway capitalization;

but contains never a word of request for power to stop railroad losses, to put its fingers on leaks, such as, for instance, the regulation of wages as fully as rates are regulated, nor for power to initiate rate schedules. The result of heaping up costs and not controlling wage expenditures, nor protecting adequate gross revenue, is eloquently proclaimed by these Rock Island figures. Of every dollar paid by passengers and shippers, there was disbursed upon payrolls†

in 1900	34 cents,
in 1907	40 cents and
in 1914	43.9 cents;

while out of the same dollar there was paid for interest and dividends

in 1900	21.3 cents,
in 1907	20.1 cents and
in 1914	19.6 cents.

Labor, that is to say, gathered unto itself 29 per cent more during the 14-year period, while capital had to be content with 8 per cent less.

While under ideal conditions, wage increases would be zealously scrutinized, no one would grudge the railroad employees their steady gain in pay if the gross resources were steadily growing to match. But they are not. On the contrary, the railroads are where a crippled \$1,000 annuitant would find himself if his living expenses were increasing \$100 per year, or where the farmer would be if he had to pay today's wages out of 40-cent wheat. If the various commissions are to continue holding down rates, they should also hold down taxes, the cost of supplies, wages and the money market. But if they are to meet actual conditions, the gross incomes need solicitous attention, that they may readily respond to growing demands. Wise legislation must include both sides of the income account, or neither.

REGULATION OF SECURITY ISSUES

Here, to my mind, is one of our finest illustrations of misdirected energy. About all it amounts to is the entering of records that nobody ever consults. The state assumes no responsibility as guarantor. Its investigations, prescribed and circumscribed by wooden statutes, are such as to make a skilled bond-broker weep at their pathos. So the investor gets nothing out of the red tape; from his viewpoint, the securities might as well be sniffed over by an experienced hound-dog. "But," say the champions of these statutes, "the public has to pay fares and tolls to provide interest and dividends, and this regulation prevents watering and minimizes the burden the public has to carry." There is one slight defect in this claim, namely: it is not true. Did you ever hear of a commission—even in Texas, where this legislation was born and raised—asking about a carrier's securities when engaged in fixing rates, heating waiting-rooms or running stub-trains? Did you ever know of a railroad charging higher rates because it had more fixed charges to pay? You never did; and in the old rate-cutting days it was always the water-logged railroad that did the rate-cutting. Did you ever hear of a commission ordering the Burlington, capitalized at \$35,000 per mile, to charge lower rates than the Alton, capitalized at \$128,000 per mile? Don't you know that any such fool order would route all the business over the road that needed it least? Is the public overtaxed when roads, such as Frisco or Pere Marquette, are neither earning nor paying fixed charges, as at present? especially when you consider that their more successful neighbors are both earning and paying larger amounts of interest

and dividends? Are you not aware that, for weal or woe, the respective capitalizations of the various carriers have been pretty permanently established for some decades, so that the sound and prosperous roads sell fewer securities at or above par, while the staggering ones must suffer huge discounts and pile up their funded debts; and hence that any attempts to protect the public, at this late date, by holding down fixed charges is a futile waste of the taxpayers' money?

There is a fallacy beneath the regulation of securities. It is the notion that the public is benefited by paying the lowest possible rates today, while the carrier borrows, for collection in the future from the descendants of the present shippers, huge sums of money represented mainly by bonds and to a small extent by stocks. Even tomorrow's shippers are paying interest on these borrowings. How much better to follow the example of the farsighted farmer or manufacturer, and build improvements, buy equipment and even construct new mileage, out of surplus earnings. Such expenditures involve no awful debt to be paid in the future and no millstone of interest payments on the carrier's neck.

Pudd'n'head Wilson—I refer to the character in fiction—says: "Put all your eggs in one basket *and watch that basket!*" I think we make a sad mistake in all our regulation. There is just one basket to watch: the surplus. Rates should be high enough to produce a surplus. The better the surplus, the better new securities will sell and the less the public will be "burdened"—if you like the word—with fixed charges. The emission of securities should be a matter of free bargaining; the money rates and the carrier's financial condition will fix the nature and price of the bonds or stock. Let the state, through its commission, step in only when the surplus is being wasted in too high dividends or otherwise. Let the state insist that surplus earnings, above a suitable maximum, be used in new work or in reduction of debts previously incurred for new mileage or improvements. Keep the carriers frugal and provident. Turn them into self-respecting men of business who run their plants with moderate incomes for themselves and with the least possible cost to present-day shippers and to posterity—the latter being no less important than the former.

A BETTER LEGISLATIVE VIEWPOINT

Such results as I have cited flow from being so zealous for the rights of man as to forget the due protection of property rights; yet the best safeguard to human life and liberty is the enforcement of respect for man's possessions.

If the legislative trend is to be improved, the first essential is the stoppage of class antagonism, the abatement of those feelings which cause legislation to be conceived in a destructive and bitter spirit. Never was a better time to pause and take our bearings. On the continent of Europe, the nations are locked in a titanic struggle, arising out of what? Largely out of the desire of each of the two chiefest nations for the commercial hegemony of the world, to wit, the advancement of its property interests. To gain this pre-eminence, each of them is destroying its property and treasure at the rate of millions per day. No matter what the outcome, they will emerge from the war impoverished, and the winner will have to take years to earn enough to purchase the hegemony that the victory entitles him to. Is commercial supremacy, at such a price, worth having?

The classic philosophical division of property is between property for *use* and property for *power*. This terrible war is the madness of property employed for power. It ought to fix us neutrals in the conviction that our sedulous end and effort must be to enhance property "for use" and the uses of property, thus inspiring real conservation and stimulating the acquisition of private possessions by every citizen in the state.

OBSERVATIONS OF A TRAVELING EDITOR.—A prize which might safely be offered in any amount would be a reward for the discovery of a man who looks happy while he is trying to hog two seats in a crowded railway train.—*The Continent*.

†Exclusive of general officers' salaries.

STANDARD TESTS FOR COLOR BLINDNESS

In a report presented at the last annual meeting of the American Medical Association, Section on Ophthalmology, three prominent railroad physicians, acting as a committee of the association, have given the results of their studies in the latest practices, throughout Europe and America, in the examination of railroad employees and others for color vision and in the most advanced requirements in this matter. The report is to be found in a pamphlet printed by the American Medical Association, 535 North Dearborn street, Chicago. It is by Doctors Charles H. Williams, of Boston; Nelson M. Black, of Milwaukee, and J. Ellis Jennings, of St. Louis. The report contains descriptions of the latest model of Williams' lantern, of the anomaloscope (recently noticed in the *Railway Age Gazette*) and other apparatus used in tests.

To obviate some of the objections found in using Holmgren's worsted test, Dr. Jennings has devised a scheme for testing with yarns without handling them, and the colors are arranged in a box or frame in such a way that a person who is tested makes a permanent record of his color sense. This arrangement consists of a square box divided into an upper and a lower half, each half having a lid—virtually two shallow boxes with bottoms joined together. The upper side of the box is marked "Test No. I Green," and contains a color-board made up of all the different colors, shades and tints likely to be mistaken by the color-blind for green. The lower side of the box is marked "Test No. II Rose," and contains a color-board made up of all the different colors likely to be mistaken by the color-blind for rose. The color-boards, like the box, are absolutely square and each contains 64 patches of worsteds $\frac{1}{4}$ and $\frac{1}{2}$ in. in size, of various colors and shades, making a total of 128 colors used in the test.

In close proximity to each patch of colored worsted is a circular opening in the color-board which is for the purpose of registering the particular patch of color chosen by the candidate. This he does by inserting a pointed pencil of wood or metal through the opening and punching a hole in the record sheet which had previously been placed beneath the color-board. The position of the patches of color and the circular openings have been arranged in an absolutely symmetrical design, so that when the box is turned in any one of four positions the same appearance is presented and it is impossible to say which is top or which is bottom. The openings in the boards are so arranged that the records of both the green and rose tests are made on a single sheet.

Method of Testing.—The cover marked No. 1 is removed, the color-board lifted out, a record blank inserted and the color-board replaced. Care must be taken to see that the mark "top" in the box, "top" on the back of the color-board and the top of the record blank all correspond. The box is now turned around several times until all sense of direction is lost.

The green test skein fastened to the inside of the box cover is placed at a distance of 2 ft. and the candidate is given the pointed pencil and requested to look along each row of colored patches and when he sees the test color or one of its lighter or darker shades, he is to place the point of the pencil in the opening opposite and punch a hole in the paper beneath. Having completed Test No. I, the cover is replaced and the box turned over, exposing Test No. II, the Rose. The corresponding record blank having been inserted and the Rose skein displayed, the test proceeds as before.

It will be seen that the subject is obliged to decide by color alone. There are no odd and even numbers to give a clue. The patches of color are small enough so that cases of color scotoma may be discovered.

RECOMMENDATIONS

The results of the studies of this committee are summarized in the recommendations which they present at the end of the report, which are as follows:

1. In every case the color-sense should be examined by

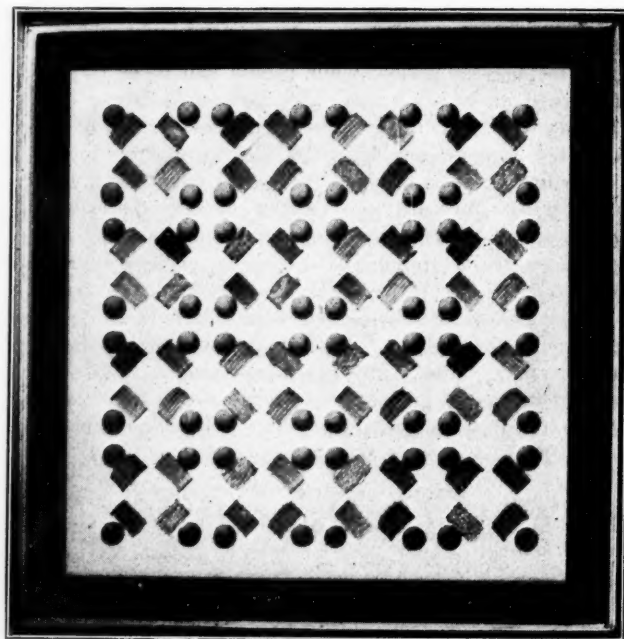
the Holmgren worsteds exactly according to the directions given. As some cases of defective color-sense may occasionally pass the Holmgren test it is necessary that another test with a lantern should be used in every case to determine the color-sense of the macula region where the colors of signal-lights must be quickly recognized.

2. (a) Those who pass the test with the worsteds and with the lantern, without making a mistake, should be classed for signal purposes, as normal.

(b) Those who make the characteristic mistakes in selecting colors which look like the green, or the rose test skein, of the Holmgren worsteds, or, who make mistakes in naming the colors of the lantern, should be classed as abnormal.

(c) Of the abnormal cases: Those who select with the green test skein some greens and also some grays, browns, rarely a red, or, who select with the rose test skein some rose or red colors, and also blues, purples, grays or greens, or with the lantern test call a red light green or white, a green light red or white, or a white light red or green, should be classed as dangerously defective in their color-sense.

Those who make other mistakes than the foregoing, or who are very hesitating in their selection or naming of colors, should be classed as having a weak color-sense. If these



Jennings' Self-Recording Worsteds Test

persons wish to work where they will use colored signals, they should be re-examined under medical supervision by repeating the tests with the Holmgren worsteds, and the lantern; and in addition with Stilling's plates (Fourteenth edition, 1913), and also with some form of spectroscope test to determine the extent of the visible red end of the spectrum, and, if possible, with Jennings' self-recording worsted test, and with the Nagel anomaloscope.

3. Cases of appeal from the original examination should be re-examined as provided in the foregoing paragraph.

4. Some plan should be adopted to ensure a proper and uniform standard in the colors of the worsteds, especially the green and the rose test skeins, and in the colors of the lantern.

5. On large railway systems, and in the marine service, there should be some central point where a complete equipment can be maintained in charge of a competent medical examiner, for the re-examination of doubtful or appealed cases. There should also be a periodic examination by such examiner of all the equipment used in these tests over the whole system, to be sure that it is kept in proper condition and renewed when necessary.

6. Reports of the examinations should be kept on file at some central point and should be supervised by some competent medical authority to see that the tests are made according to the instructions.

7. The Section on Ophthalmology should adopt some standard form of instruction and record blanks which may serve as a guide for those who make the tests.

It will be noted that in the foregoing recommendations no mention is made of red-blind, or green-blind, or blue-blind. The border-lines between the various forms of defective color-sense are not sharply marked, and with the means at the disposal of the examiner in making the routine tests of large numbers of men, it is not possible for him to determine with certainty the exact quality of the defective color-sense, nor is it essential. It is sufficient if he can pick out those who are dangerously defective in their color-vision, or who need a further special examination, and the committee believes that a careful study of its report, and a strict compliance with the methods and standards there explained, will enable the examiner to make these tests for color-vision fairly and accurately.

THE WAR AND PENDING RAILWAY FINANCE

BY GEORGE A. CLARK

The railroads of the United States, Canada and Mexico have approximately three-quarters of a billion dollars of bonds and notes now outstanding, which mature during the next five years, 1915 to 1919, inclusive. Approximately \$450,000,000 will fall due during 1915. In these totals no account is taken of equipment trust obligations, of the new capital which must be raised to perfect pending reorganizations of a large amount of mileage now in receivers' hands, nor of the new capital expenditures which are absolutely necessary during this period. A most conservative estimate would place the requirements for these purposes at not less than \$250,000,000.

The task of raising a billion dollars even in normal times for an industry which has largely passed the period when the inducement of large profits may be held out to investors, is a fairly sizable one. The fact that a large part of the total amount required during the period is already invested, and that in the process of refunding the actual amount of new capital brought into the industry is relatively small, does not lessen the seriousness of the situation. Because of the abnormal conditions prevailing as a result of the war a considerable part of the money represented by the maturing obligations will be diverted to other classes of security. The wide extent of the war and the consequent enormous waste of capital with resultant influence on interest rates has brought about a situation more serious than the railroad industry has ever faced before.

Those companies which are under the necessity of refunding maturing obligations in 1915 and to a slightly less extent during the subsequent three or four years are confronted with a situation more pressing than the problems which they have been struggling with during the past few years. For the time being the necessity of raising new capital upon such terms as will permit a continuance of the corporate existence of the companies involved overshadows problems of increased operating efficiency, higher rates and combatting labor demands. The money to refund these obligations must be raised or the inevitable receivership faced. Fortunately, the obligations maturing in 1916, 1917, 1918 and 1919 are relatively small in amount, both for the individual companies and in the aggregate, for the several years.

The statement in the accompanying table sets forth the principal obligations matured and maturing during 1915, including equipment trust obligations, arranged in order of maturity.

It is generally conceded that, as a result of the war, higher

interest rates will be the general rule for some time to come. It is possible that long-term money will cost more than it has at any time since the Civil War. During the progress of the war, not only have the processes of production been stopped, but an enormous sum is being consumed by the operation of the hostile armies and navies. Modern warfare is so costly that the European conflict may deplete the world's surplus of capital almost to the point of exhaustion. Possibly during the progress of the war, and certainly following its conclusion, the principal governments involved will endeavor to float loans. It is conceivable that the necessity for money will be so pressing on the part of the combatants that interest rates unknown in modern times will prevail. Such a development could have but one result upon the market for railroad securities. The income return of-

Company	Obligation	Interest Rate	Due, Date	Amount
Ashley River	1st currency	6s	Jan. 1	\$33,500
N. Y. C. & H. R.	1 yr. Notes	5s	Jan. 1	30,000,000
St. Louis & San Francisco	Rec. Cer.	6s	Jan. 2	3,000,000
N. Y. C. & H. R.	S. P. & O. 1st	6s	Feb. 1	175,000
Chicago & North Western	Cons. currency	7s	Feb. 1	12,832,000
A. T. & S. F.	Chic. & St. Louis 1st	6s	Mar. 1	1,500,000
Boston & Lowell R. R. Corp.	Plain	4s	Mar. 1	500,000
Michigan Central	Notes	4½s	Mar. 1	6,000,000
Boston & Maine	1 yr. Notes Ext.	6s	Mar. 2	27,000,000
Erie Railroad	Coll. Trust Notes	5s	Apr. 1	10,000,000
A. C. L.	Richmond & Petersburg	6s 7s	May 1	340,500
Missouri, K. & T.	2 yr. Notes	5s	May 1	19,000,000
N. Y. C. & H. R.	3 yr. Notes	4½s	May 1	20,000,000
N. Y. C. & H. R.	Oswego & Rome 1st & 2d	5s & 7s	May 1	750,000
N. Y. N. H. & H.	Harlem Rv. & Port Chester	5s	May 1	10,000,000
N. Y. N. H. & H.	Notes	5s	May 1	20,000,000
Missouri & No. Arkansas	Rec.	5s	May 1	1,250,000
Lake Shore & Michigan Central	1 yr. Notes	...	...	20,000,000
Discounted May 15	Notes	...	...	35,000,000
Baltimore & Ohio	Notes	4½s	June 1	11,677,000
D. L. & W.	Morris & Essex Cons.	7s	June 1	24,942,000
Missouri Pacific	Extended	6s	June 1	26,730,000
Nat'l Rys. of Mexico	2 yr. Notes	6s	June 1	1,892,000
Pere Marquette	Rec.	5s	June 1	5,000,000
Cumberland Corporation	Conv.	5s	June 1	3,500,000
Canadian Northern	Notes	6s	July 1	13,147,633
Canadian Pacific	1st	5s	July 1	10,000,000
Western Maryland	Coll. Notes	5s	July 1	3,000,000
Western Maryland	Coll. Notes	6s	July 1	2,000,000
Hampden R. R. Corp.	Notes	6s	July 6	1,500,000
Chicago & Eastern Illinois	Re. Cert.	5s	Aug. 1	16,000,000
Pittsburgh, Shawmut & Northern	Rec.	6s	Sept. 1	10,000,000
Wabash R. R. Co.	Re. Cert. Ex.	5s	Oct. 1	200,000
Chicago & Western Indiana	Notes	3½s	Oct. 1	86,827,000
C. & O.	Kineon Coal 1st	6s	Nov. 1	1,323,000
Penn. R. R.	Conv.	5s	Nov. 1	350,000
Vicksburg, Shreveport & Pac.	Prior Lien	5s	Nov. 1	239,000
C. St. P. M. & O. S. Ste. M. & S. W.	1st Cur.	6s	Nov. 1	1,320,000
Erie Railroad	Tioga 1st Ext.	...	...	...
New Orleans & North Eastern	Prior Lien	...	...	...
Total				\$443,028,633

ferred and the safety of the investment must be comparable with the investment features offered in the obligations of foreign governments.

Although the aggregate amount of capital which must be raised for refunding purposes bulks large in a situation like the present, there is cause for congratulation that such a large amount of permanent financing was successfully completed during the first half of 1914. During this period a number of the leading companies have been successful in substituting on a favorable basis long-term obligations for short-term notes. In addition the capital requirements of these companies were anticipated sufficiently to provide for pressing immediate needs. The Southern Pacific, the Northern Pacific, the Chicago, Milwaukee & St. Paul and the New York Central & Hudson River Railroad raised \$165,000,000 for this purpose. A number of companies, including the Southern Railway, the Maine Central and the Chesapeake & Ohio, raised large sums by means of three and five year note issues. Two important companies, the Erie and the Baltimore & Ohio, both of which, according to reports, have been working on a general and refunding mortgage, refunded their maturing obligations through the sale of one year notes. The latter company has \$35,000,000 maturing June 1, 1915.

Generally speaking, the situation is as sound, if not better, than at any time since 1907. Many extensive programs of improvements have been largely completed. A part of the

expenditure represented by these improvements has already been permanently financed. This is particularly true of the Chicago, Milwaukee & St. Paul and the New York Central & Hudson River.

It is particularly fortunate in view of the probable investment conditions that more than half of the obligations which mature are those of companies enjoying the very strongest credit and whose securities are held in high regard by the investing public. The Pennsylvania Railroad Company with \$86,827,000 3½s, the largest single maturity, maturing in October, has long been considered the premier American railroad in investment stability and this company has just sold \$49,000,000 consolidated mortgage bonds at a very good price.

In spite of these encouraging features, and there are many, there still remains for a number of important companies the difficult task of refunding maturing obligations in such a manner as to avoid excessive charges for the capital required without incurring undue risks in further refunding at some future date.

The uncertainty among investors as to the probable trend of investment conditions will make it difficult to sell long-term obligations on a satisfactory income basis. In such a time it is not feasible to raise any large sum through the sale of capital stock. Of necessity most of the companies will be forced to fall back upon short-term notes.

In again resorting to this type of finance on a general scale the fiscal representatives of the companies will have the benefit of the experience of the past six or seven years in this form of financing. If nothing else, this experience has demonstrated the danger of too short maturities, particularly when the issue is a large one. Short-time notes in large amounts maturing in less than two years should only be issued by companies enjoying the very best credit. For companies not so favored as to credit, it would seem as though the adoption of the principle used in refunding equipment trust notes might be used to advantage. The Minneapolis & St. Louis affords an interesting illustration of the possibilities in retiring a part of an issue at a time. Short-time notes maturing serially might be used to good advantage at this time.

A short-time note is essentially nothing less than the promise of the issuing railroad company to pay the amount named in the course of a few years. In the past a number of companies have attempted to improve the investment standing of their issues by securing them with collateral which has frequently consisted of mortgage obligations of the same company. Investors have not found in practice that the presence of the collateral has more than a sentimental value. If a company reaches a position where payments of either interest or principal upon a short-time obligation must be defaulted, the general refunding obligations of the same company when secured by third, fourth or fifth mortgages are at best of doubtful value.

If the assumption is correct that following the war capital will be difficult to secure, this condition has come about at a most fortunate time in the history of the railroad industry in this country. The process of construction, of system building and intensive development has been about completed. True, large amounts of capital will be required in the future for the further enlargement and improvement of existing facilities. For the time many of these betterments can be postponed without irreparable injury. An expenditure which will pay its way in increasing operating efficiency is always to be desired, but when the capital for such an improvement must be secured upon terms which involve a serious risk as to the ability of the company to refund the obligation at maturity, it should be deferred to a more favorable time. Rigid economy, a high degree of personal efficiency and a conservative refunding policy as to additional financing would appear to be the most logical program for the present.

ANNUAL REPORT OF MASSACHUSETTS COMMISSION

The Public Service Commission of Massachusetts has sent to the legislature its second annual report. It is made up largely of statistics; and these go back ten years or more, including the records of the former railroad commission, which was superseded by the Public Service Commission in 1913.

With the enlargement of the functions of the commission under its new organization several new departments have been established. The rate and tariff bureau is one of these; this bureau received up to the end of the year 5,176 tariffs, which have been filed and indexed. The commission has aimed to keep down the expense of this work and the report says that the system adopted is much simpler than that used for similar work in other offices. In complying with this new law, and filing all tariffs with the commission, the railroads found many questionable and improper rates in force, and these have been cancelled.

The report recounts the action of the railroads during the past year in making advances in passenger and freight rates, and contains a full copy of the standard mileage schedule of class rates for freight on which were based the new freight tariffs of the Boston & Maine. The other two principal roads, the Boston & Albany and the New York, New Haven & Hartford, have adopted a similar basis; and this uniformity throughout the state is looked upon by the commission as a great public benefit.

The chief of the inspection department is George W. Bishop, who assumed the duties of that office August 1 last. The report gives a summary of the work of this kind done during the year ending June 30 last, some of the items of which are:

	Examinations	Reported Faulty
Frog and switch blocking.....	.....	918
Bridge guards .....	.....	401
Passenger stations (971).....	5,222	112
Locomotives (2,625)	3,929	492
Spark arresters and ash-pans (additional to above)	655	...
Passenger cars	13,004	1,446
Passenger cars (street railways).....	3,257	786

During the year 16 collisions, 40 derailments and 429 fatal accidents to individuals were investigated. The inspectors of the commission attended 362 inquests. Of the ten passengers killed during the year all were reported as having been the victims of their own imprudence or negligence.

The engineering department is in charge of Henry W. Hayes; L. E. Moore is engineer of bridges and signals and W. J. Keefe assistant engineer of signals. This department has made a large number of examinations of properties, both steam railroads and electric lines, in connection with improvements to the property and applications for authority to issue new stock or bonds. The report includes a detailed statement of railroad signals, like that issued by the Interstate Commerce Commission; and also a list, made up in somewhat the same way, showing signals on electric lines. In this list of electric lines there are 39 companies. The automatic signals on these electric lines are classified as "counting" and "non-counting," the mileage of road entered under the head of counting being 72.15.

The telephone and telegraph department of the commission is in charge of W. H. O'Brien. The report names 15 features in which the commission has brought about improvements in telephone service.

The general discussion at the close of the report is very brief, and it is stated that certain important matters, which are now pending, will be made the subject of special reports to the legislature.

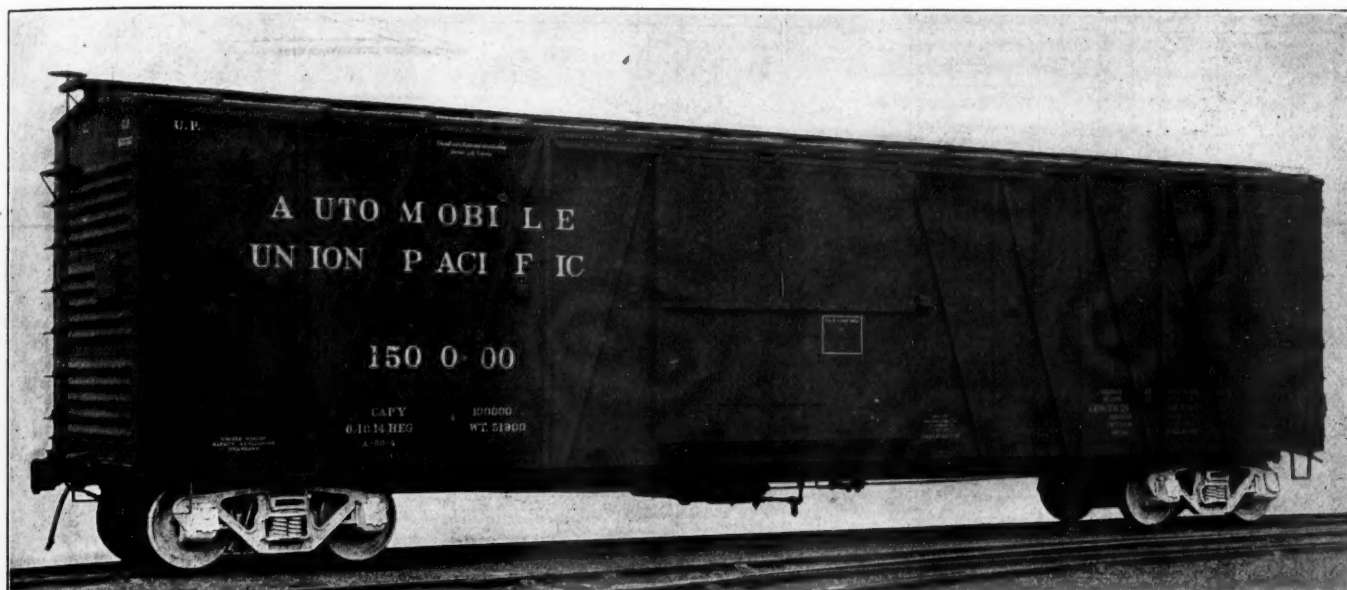
HOSPITAL TRAIN FOR EGYPT.—A hospital train has been placed at the disposal of the military authorities in Egypt through the generosity of the Egyptian Red Crescent Society, which has contributed the sum of \$8,000 for this work. The train was equipped in the Egyptian state railways work shops, and will accommodate 12 officers and 96 wounded men.

Recent Additions to Union Pacific Freight Equipment

Steel Automobile Car, and Box Car With Underframe, Roof and Ends of Steel; Both of 100,000 lb. Capacity

There were placed in service a short time ago by the Union Pacific 4,000 steel underframe box cars, 2,000 of which were built by the American Car & Foundry Company, and 2,000 by the Western Steel Car & Foundry Company, and 600 all-steel

sisting of a 20 in., 112 lb. I-section girder, while a cast steel body bolster is used. The end sills are 8 in., 13.75 lb. channels and 6 in., 8 lb. channels are used as diagonal braces between the end sills at the center sill and the body bolster near the side sill.



Union Pacific Steel Car for Automobile Traffic

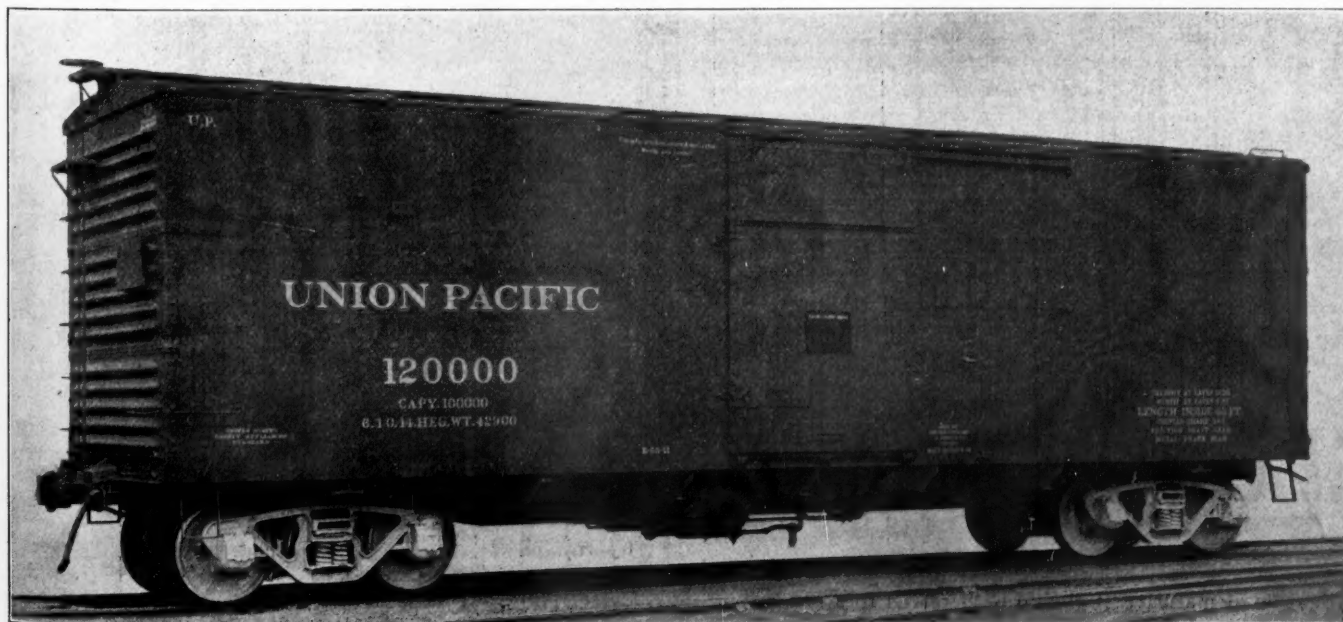
automobile cars built by the Western Steel Car & Foundry Company.

AUTOMOBILE CARS

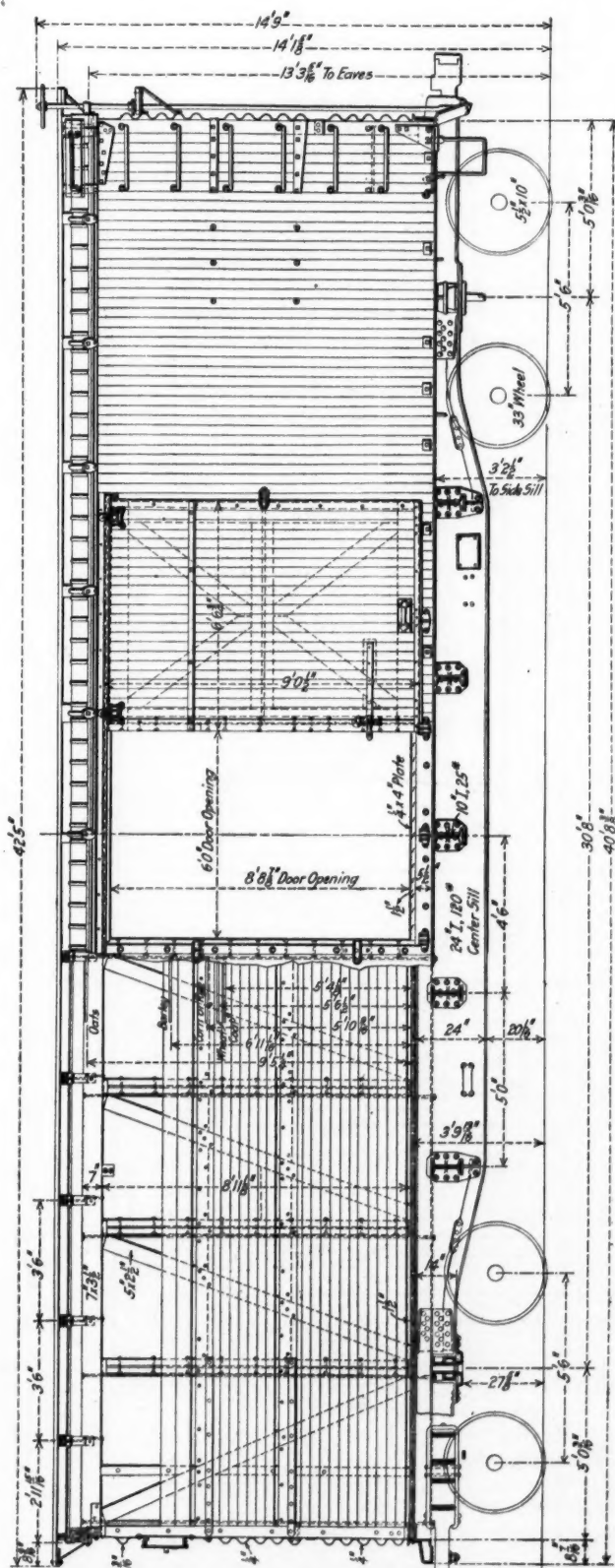
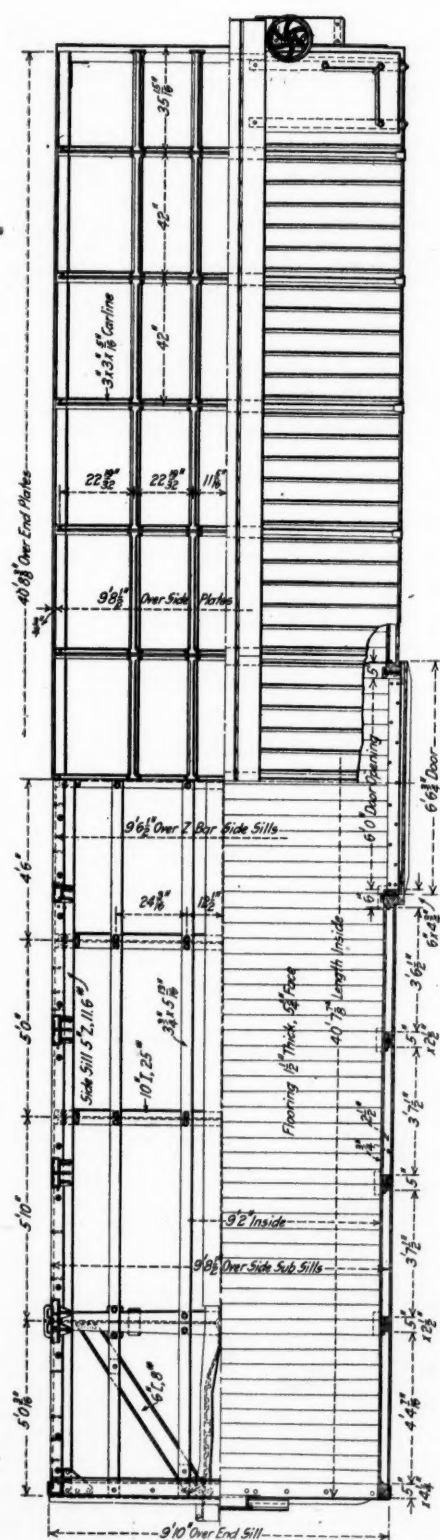
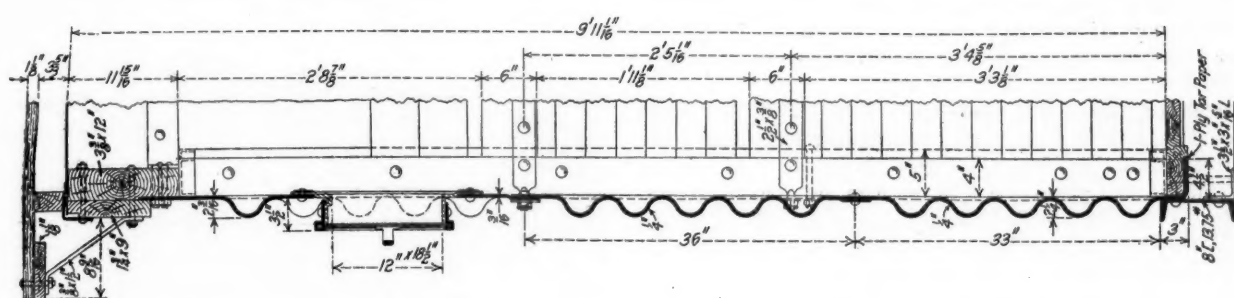
The automobile cars are of 100,000 lb. capacity and weigh 51,900 lb. They are 50 ft. 6 $\frac{3}{8}$ in. long over end sills and are 50 ft. long inside. The height from the top of the floor to the bottom of the carlines is 10' ft. 1 $\frac{1}{8}$ in., and the cubical capacity is 4,630 cu. ft.

The underframe is of the Bettendorf type, the center sills con-

sisting of a 20 in., 112 lb. I-section girder, while a cast steel body bolster is used. The end sills are 8 in., 13.75 lb. channels and 6 in., 8 lb. channels are used as diagonal braces between the end sills at the center sill and the body bolster near the side sill. The side sills are 9 in., 13.25 lb. channels and the crossies which extend between the center sill and the side sill are 8 in., 11.25 lb. channels. A 3 $\frac{1}{2}$ in. by 2 $\frac{1}{2}$ in. by $\frac{1}{4}$ in. angle extends in the form of a bow between points on the center sill just back of the draft arms, the top of this arch being at the side sill on either side of the car. There are 4 in. by 4 in. wooden stringers used for supporting the floor and these are carried on the 8 in. channel crossies. The trucks are spaced 40 ft. 4 in. between centers and have cast steel side frames of the Vulcan type. One end



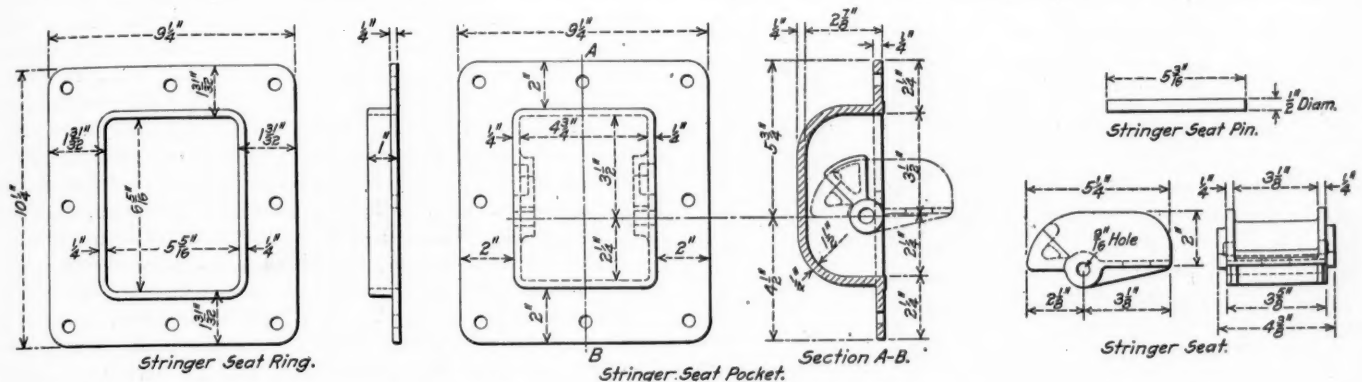
Steel Underframe Box Car for the Union Pacific



Arrangement of the Framing and Ends of the Union Pacific Box Car

The center sill consists of a 24 in., 120 lb. I-section girder while the body bolsters are of cast steel. It will be noticed that this center sill is heavier in the box car than in the auto-

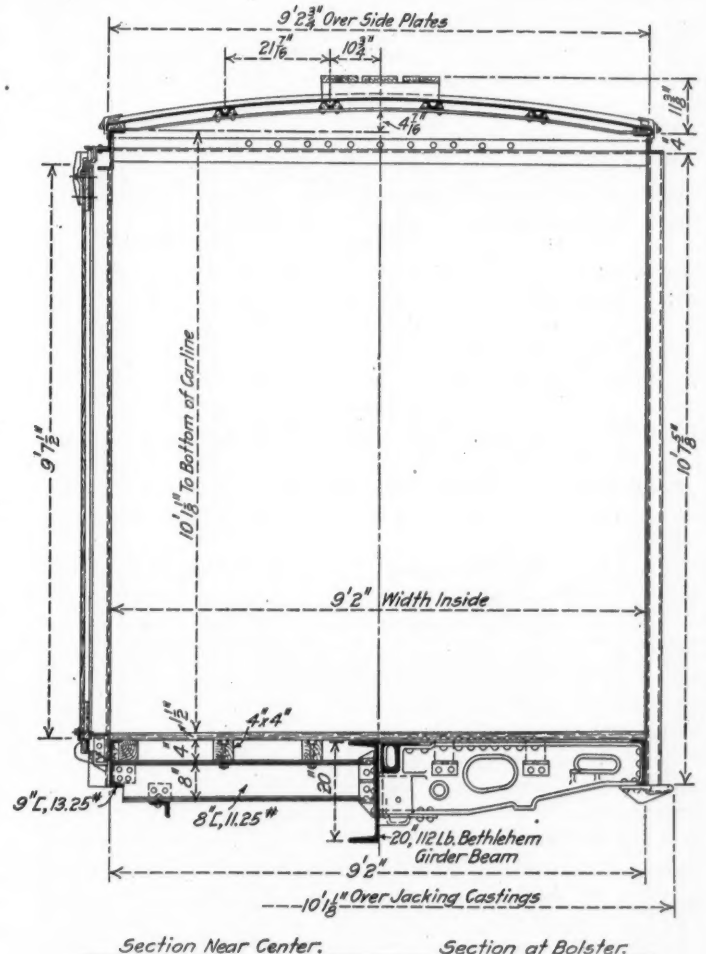
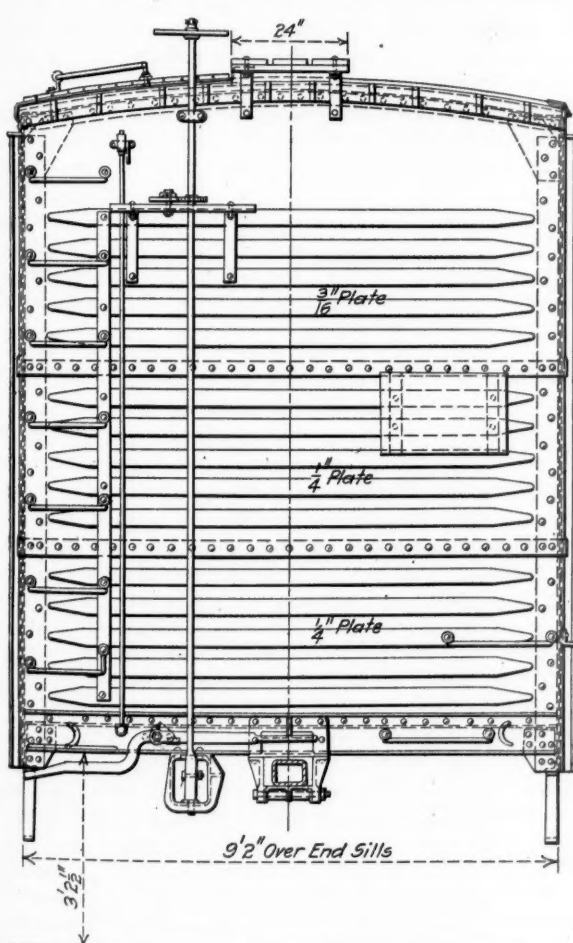
U-section purlines and 3 in. by 3 in. by 5/16 in., T-section carlines, each 42 in. between centers. There are two purlines on either side of the car, spaced 22 19/32 in. between centers.



Upper Deck Stringer Pocket Used on the Automobile Car

mobile car, the reason for this being that the center sill in the box car was designed to carry the greater proportion of the lading, while in the automobile car it was the intention of the designer that a considerable portion of the weight of the lading

The special equipment on the box cars includes Climax couplers, Barber truck roller device, New York air brakes, Creco brake beams, Carmer coupler release rigging, Vulcan cast steel truck side frames, Camel door fixtures, Miner draft rigging, Na-



End Elevation and Cross Sections of the Automobile Car

should be carried by the side frames of the car. The end sills are 8 in., 13.75 lb. channels and the side sills are 5 in., 11.6 lb. Z-bars. There are 6 in., 8 lb. channel diagonal braces between the ends sills at the center and the body bolsters at the side sill; the crossies are 10 in., 25 lb. I-beams. The superstructure of the car is of wood, but the ends are of the Murphy corrugated steel type, there being an 18 1/2 in. by 12 in. door opening in one end. The roof is of the Murphy radial steel type with pressed steel

tional malleable journal boxes, Buckeye cast steel truck bolsters and Miner gravity truck side bearings.

RAILWAY CONSTRUCTION IN THE NETHERLANDS.—It is reported that the Netherlands Minister of Waterways, Railways, etc., has granted to the Geldersche Stroomtramweg-Maatschappij a concession for a railway from Dieren to the Prussian frontier in the direction of Isselburg.

RIVERS AND RAILROADS IN THE UNITED STATES*

BY WILLIAM W. HARTS

In most of the progressive countries of the world, especially in those where population is dense and production large, the improvement of the waterways by the government, for better communication in the interior, and the protection and deepening of harbors, have gone on at a rate which, as a general rule, has kept pace with the increase in population and production. Of late years, however, this progress has been strongly affected, both in America and in Europe, by the development of railways—sometimes favorably and sometimes otherwise.

In the United States the improvement of rivers by federal appropriations extends far back into the early history of the nation, long before the era of railways.

With the coming of the steamboat, the government's interest in canal and highway work was soon expanded to include the improvement of rivers and the deepening and protection of harbors as the necessity therefor grew, so that, by a natural process of development, the duty of designing and constructing the enormous waterway projects which have since come into existence was the logical inheritance of the army engineer.

The very early records of public money expended are so incomplete that they can scarcely be used to illustrate the enormous growth of these works, but between 1875, a comparatively recent date, and 1914, the annual appropriations increased from \$5,218,000, in round numbers, in 1875, to \$53,000,000 in the proposed act of 1914, or more than eightfold in about 40 years. These large sums are appropriated and expended in accordance with projects prepared by the army engineers and approved by Congress. The responsibility, therefore, must be shared between these two in some proportion, however unequal.

Very few people realize the amount of river and harbor improvement already adopted or under construction. Projects which have already received the sanction of Congress and are under process of construction now amount to more than \$200,000,000. About \$86,500,000 in new work has been reported favorably by the engineer department, but has not yet been adopted by Congress. In addition, there are projects amounting to more than \$2,500,000, which have been favorably considered, but not yet accepted by the engineer department. Thus, there is a total of work costing more than \$289,000,000, which is either in progress, or approved by Congress, or soon to be brought before the country.

It has been officially reported that in the 100 years, from 1802 up to December, 1902, there had been spent by the United States Government \$221,869,759 for rivers, \$147,448,903 for harbors, and \$33,237,857 for canals, or a total of more than \$400,000,000. From 1814 to 1900, France spent \$449,000,000 on new works and in the maintenance of those already built. Similarly, Belgium spent \$101,000,000 between 1831 and 1903. Between 1813 and 1906, Prussia spent \$129,000,000 for new construction alone, and her maintenance charge in the single year, 1905, was \$4,000,000. The United States is, about 18 times as large in area as either France or Germany, and has about four times the length of navigable streams. Although the density of population in the United States is much less, being only about one-half that of all Europe, and about one-twelfth that of Germany, it can be seen that the United States has more than kept pace with other progressive nations, when density of population is considered.

The first question that will be asked the river engineer is, to what extent are these facilities used, and do they pay in public service for the enormous cost of construction and maintenance? When we begin to study the economic features connected with works of this character, we are struck with surprises. The advent of the light-draft, inexpensive steamboat made our rivers and waterways of great value as commercial carriers at a very

early date. Too much praise cannot be given to this simple means of developing a great region. The hazards of this sort of transportation, however, were very great, and the steam railroad was beginning to be a fierce competitor after the Civil War. Railroads found a fertile field in those areas where the rivers had already induced a new prosperity. As these railroads were developed throughout the country into that intricate network which is the pride of the nation today, little by little the freight formerly handled by river was taken over by the railway lines, until now it is found that practically all the rivers of the great Mississippi Valley are dwindling in commerce in spite of the large expenditures for better channels that have been and are still being made. This falling off in usefulness is in the face of an enormous expansion in production of all kinds and a development of commerce that is unsurpassed in our history.

The Mississippi valley is one of the richest and most productive areas in the world. The volume of commerce originating there is enormous, and has been rapidly increasing during the past 15 or 20 years, but, notwithstanding this growth, less and less is being carried by the rivers, and only those few streams which are not paralleled by railroads are still managing, with many a struggle, to maintain their former value to the public. Nowhere are the products of the farm more valuable; nowhere are the mines more productive, and nowhere are the energy and capacity of its people excelled in all those various pursuits of wealth which are so numerous in this great area. If, therefore, the rivers anywhere might be expected to show increased usefulness as the country develops, it would certainly be in this region. It is, therefore, with keen disappointment that the opposite tendency is found to be growing more than ever apparent. Rivers in this valley were teeming with steamboats and barges within the memory of men still living. The arrival and departure of the large packets were events of much interest in the various towns where steamboat landings were scheduled, and boating was a well recognized industry, employing many men. Today, however, the passenger traffic by river boat has almost disappeared, and bulky and slow freight forms the main part of what is left of a once flourishing business.

The explanation of this is not far to seek. The railway of today is well able to compete with the waterways at every turn. Combinations of many small and weak lines into through routes, and the extension of rail lines into every region where it seemed reasonable to expect a financial return, have developed what was a disconnected and feeble collection of roads into a systematized network of enormous value. The unfeeling and unrelenting competition which commenced first between river and rail lines and then continued among the various rail lines themselves, has forced an economy of operation and administration which has made the rail lines a giant in power and a miracle of usefulness. Within little more than a generation, the average cost of moving a ton of freight a mile in the United States has diminished from 7½ cents to about 7½ mills, a reduction of 9/10ths, and some of the coal roads having easy grades and flat curves boast that their tonnage cost has been cut to 2.3 mills per ton-mile. This is the harsh competition that rivers must meet. Railroads can be changed in location, and terminals can be placed wherever needed; cars can be switched from one line to another; spurs can lead to the point of destination without transshipment or breaking bulk, and distribution is simplified. On the other hand, waterways are fixed in location, require numerous expensive terminals, need constant improvement, and require steamboats and other craft of considerable cost. River lines have the advantage that their roadbed is provided by the government. Railroads require large sums for general administration; for employees in yards and at stations; for maintenance of way and equipment; for interest on their capital invested, and taxes. As the steamboat has no maintenance-of-way expense, it has a great advantage over the railroad in regard to fixed charges. Its interest on its cost has been estimated at 5 per cent, insurance 8½ per cent, and maintenance at 7½ per cent, whereas the railroads must pay interest on the cost of the entire road, estimated at 5 per cent.

*From a paper presented before the American Society of Civil Engineers, February 3, 1915.

maintenance estimated at 2 per cent, interest on the cost of equipment 5 per cent, maintenance of equipment 10 per cent, and insurance 3 per cent. Notwithstanding this unequal burden, railroads have out-distanced the river in economy of administration, and on most roads the fixed charges for interest on capital and maintenance are much less per ton-mile than those on a river packet. This indicates clearly the reason for the decline of the river commerce of St. Louis in 30 years from 2,120,825 tons in 1880 to 191,965 tons in 1910, a loss of about 9/10ths. During the 17-year period, from 1890 to 1906, the river commerce of that city dwindled from about 1,260,000 tons to about 317,000 tons, but in the same period the rail business increased from 15,000,000 to about 45,000,000 tons, or about 200 per cent, according to the reports of the St. Louis Merchants' Exchange. As a competitor, the Mississippi river has fallen from a position of pre-eminence to almost a negligible quantity.

Furthermore, of late years, a great decrease in the cost of handling freight on railroads has taken place, notwithstanding increases in cost of materials, labor and taxes. On the other hand, an increase of at least 50 per cent in steamboat operation costs has taken place, due to these same advances, but this has not been offset by reduced operating expenses. The river steamboat has not changed much in late years, and river terminals have nowhere been improved to a marked degree; certainly these improvements have not kept pace with the improvement of the channels by the government. It has been stated that the stock in the largest company plying between Louisville and Cincinnati has fallen from a high premium to less than par within the last 25 years, a loss of more than 80 per cent.

The realization of the one-sidedness of this unequal struggle has of late years brought with it to river engineers a feeling that we are now far ahead of the demands of the present in many of our inland streams, and henceforth expenditures should be restricted to the barest necessities until the commercial development of the neighboring regions brings with it new demands. It seems not too strong a general statement to make that the navigational facilities on every stream on which commerce is now diminishing is far in advance of the present necessities, and that additional improvement at public expense should be withheld until such time as the economic pressure for additional transportation facilities becomes plainly manifest.

It seems reasonable to suppose that these tendencies toward diminution of river commerce are not necessarily permanent everywhere, for the commercial development of the areas contiguous to transportation lines is nearly always conspicuous, and frequently brings a need for additional facilities. New railroads are not being built so rapidly as a few years ago, and some day some of the interior streams may be expected to handle an increasing commerce in bulky freight where time of transit is not of great importance. This need for meeting the demands of expanding production may bring back some rivers to a new usefulness that cannot now be safely predicted.

Nor must we conclude that all our rivers are losing their value as commerce carriers, or that all are even diminishing in usefulness. Many streams outside the great central valley of the country, particularly those that empty in the harbors along the coast, and allow ocean-going vessels or coastwise ships to reach interior points, are showing very encouraging results. Some of those entering New York harbor, for example, in the regions where population is dense, are very valuable and carry large quantities of commerce. In 1905 Arthur Kill had a commerce of 11,700,000 tons, valued at \$265,000,000; and in 1911 it had a commerce of 30,500,000 tons, valued at \$515,400,000.

In looking over the history of some of our rivers, it appears that they pass through several more or less indistinct stages of usefulness. First, while the country is comparatively undeveloped, and before the construction of railways has been begun, the rivers are found to be the best and cheapest lines of commerce. At such times the steamboat enterprise thrives and river commerce multiplies. In some cases new land is opened to profitable cultivation, or new industries are encouraged. Later, towns spring up, and a whole region often receives a new im-

petus from its greater accessibility. Next comes the period when the results of this enterprise have brought about such a prosperous condition that the extension of railways is induced in the same territory. They, with their many advantages, then absorb most of the river transportation business. River commerce dwindles during this period, even though increase in production is noticeable on every hand. At such time discouragement may be felt by river advocates, because it seems that the rivers are not performing their wonted part in the upbuilding of the country through which they pass, for the part played by the streams is lost sight of in the economic progress of the neighborhood.

This discouragement might be justified but for the third stage, which seems to be within the range of safe prediction for some of our internal waterways, especially if one judges by the rivers emptying into New York harbor and those rivers like the Rhine flowing in congested communities. This third stage comes when the population and production have increased to such an extent that all lines of traffic are insured a large part in the transportation business of the locality. At such times the rivers again become useful and efficient. If we have proceeded too rapidly in the improvement of our interior rivers, there is still this hope of ultimate usefulness after the second stage has passed.

On the other hand, however, our harbors have had no such vicissitudes. Economy of ocean transportation has gradually forced ship-owners to adopt deeper draft for their vessels. With the advent of steam, the depth of hull has steadily increased until now the largest ships are limited to few ports. The expansion of the railways throughout the interior, in many cases, has led directly to the greater development of the seaports.

The harbor, by its very nature, is a sort of terminal where products are exchanged between rail and water. Thus the railway, which is now having such an adverse effect on some of our interior rivers, has at the same time brought about a corresponding necessity for improvement in many of our harbors, and has contributed enormously to their value.

For example, in 1892, in New York harbor, the exports and imports of foreign trade alone amounted to about 5,000,000 tons. In 1912, it totaled more than 14,000,000 tons, an increase of nearly 200 per cent. The total commerce by water was estimated in the 1906 census report at 114,000,000 tons. The harbor at Norfolk in 1892 had a commerce of 3,427,000 tons, whereas in 1912 it was more than 22,000,000 tons, an increase of nearly sixfold. Savannah in 1892 had about 2,000,000 tons of commerce, and in 1912 more than 3,120,000 tons, an increase of more than 50 per cent. Galveston in 1892 had a tonnage of 1,134,326 tons, and in 1912 a total of 3,224,367 tons. These cases are probably the more conspicuous ones, but it may be accepted as a general rule that all the larger harbors have amply justified the expenditures made in providing better channels.

On the whole, our expenditures for waterways have been of immeasurable benefit to the country at large. Never in our history has the volume of domestic and foreign commerce been so great, and never has the outlook for future increases been brighter. Our over-sea exports and imports are now growing enormously, and the prosperity of the land requires that there should be no restriction anywhere on account of inadequate channels. A practical test, almost infallible in its application, that will show whether a waterway project can be economically considered for further improvement, is a progressively increasing commerce, and the measure of saving in cost of transportation will always be a guide as to the extent of work that is justified.

Thoughtful observers of our system of channel development have been impressed with the tendency of the government to over-liberality in many instances, but the signs are multiplying that, in the near future, the public will demand a more rigid adherence to economic laws in the adoption of new projects.

GERMANS AND THE BELGIAN RAILWAYS.—It is reported that the entire Belgian railway system was put into operation on January 1, about 8,000 employees of German railway administrations, including 1,100 railway employees from Bavaria, having left for Belgium recently.

Western Engineers' and Firemen's Arbitration

Continuation of Railroads' Statistical Evidence. Payrolls Showing Actual Earnings of 64,000 Men Presented

J. H. Keefe, assistant general manager of the Gulf, Colorado & Santa Fe, occupied the witness stand throughout all of last week in the hearing at Chicago before the board of arbitration on the western engineers' and firemen's demands, continuing his testimony on statistical exhibits introduced in behalf of the railways. On Monday, January 25, Mr. Keefe presented testimony to show what would be the effects of the proposed automatic release rule as applied to "turn-around" runs, as in suburban service. The rule provides that when a crew reaches the end of its run or a terminal and is then required to perform any other service, a new day shall begin. "An engineer in actual service on one of our mixed trains," said Mr. Keefe, "now earns \$202.74 per month for working 8½ hours per day on one of these 'turn-around' runs. With the demanded rules in effect this man would have earned actually in October, 1913, \$1,435.75. His increase in pay would equal 608 per cent. The fireman on this run actually earned \$119.04, and it was on an oil-burning engine on which no coal was shoveled at all. This fireman would have been paid \$937.79 for his month's work under these rules. His increase would be 688 per cent."

In the cross-examination of Mr. Keefe, Warren S. Stone, grand chief of the engineers, tried to show that it was not fair to compute the cost of overtime on the basis of the present amount of overtime, because, he said, the rule of time and one-half was intended as a penalty and that the roads would manage to reduce the overtime. The same argument he applied to the automatic release and tie-up rules, saying that the effects of the rules would be avoided by a rearrangement of operating methods or terminals, and that the figures compiled to show their cost were "purely imaginary."

At the conclusion of Mr. Keefe's testimony as to the cost to the railroads complying with the demands, which was summarized in last week's issue, Mr. Stone insisted that the railroads furnish the basic information from which the exhibit was made consisting of time cards, train sheets, delay reports and the time slips of the engineers and firemen on all the roads for the month of October, 1913. He said he was satisfied that there was "something wrong" with the figures and that he had no other way of checking them. Mr. Sheehan said that the roads would furnish anything the board desired, but he pointed out that they had already presented the detail reports furnished by the individual roads on the forms submitted to them for that purpose, and certified to by the proper officers, with the understanding that each company should be fully prepared to defend any figures reported regarding which any controversy might arise. Mr. Park asked Mr. Keefe how many trainloads of train sheets it would be necessary to bring to Chicago. Mr. Keefe said it would take 30 train sheets for each of the 544 districts, making 16,320 train sheets; also the individual time slips for 64,000 men for 30 days, or 1,820,000 time slips, in addition to delay reports and roundhouse records.

After consideration Chairman Pritchard announced that the board had decided to grant the request, feeling that the law required it to do so, but he suggested a conference with the hope that some plan might be adopted by which time and labor might be saved. An agreement was finally reached that these records would be furnished for only five roads.

Mr. Keefe presented as Exhibit 4 a statement of the revenues and expenditures of the roads parties to the arbitration for the fiscal year 1914, as compared with 1913 and 1910. This showed that the total operating revenues increased from 1910 to 1914 by \$106,430,973, while the operated mileage increased 8,500 miles, and the operating income decreased \$15,652,533. The decrease in operating income from 1913 to 1914 was \$39,128,875. The decrease per mile from 1910 to 1913 was \$312, and from

1913 to 1914 was \$335. Taxes increased from 1910 to 1914 by \$18,687,060, and from 1913 to 1914 by \$8,219,000. The increase per mile in 1914 over 1910 was \$119, while in 1914 as compared with 1913 it was \$58 per mile. The expenditures per mile for maintenance of way and structures were \$1,409 in 1910, \$1,387 in 1913, and \$1,367 in 1914. For maintenance of equipment the expenditures per mile in 1910 were \$1,333; in 1913, \$1,525, and in 1914, \$1,529. The cost of conducting transportation per mile in 1910 was \$3,246; in 1913, \$3,538, and in 1914, \$3,417.

In Exhibit No. 5 Mr. Keefe presented the income accounts of the roads involved for 1910, 1913 and 1914. This showed that the interest payments on funded debt in 1910 amounted to \$166,873,921; in 1913, to \$194,070,135, and in 1914, to \$193,731,080. The dividends declared out of income amounted in 1910 to \$168,150,945, in 1913 to \$154,341,750, and in 1914 to \$146,155,706. Appropriations from income for additions and betterments in 1910 amounted to \$10,633,797, in 1913 to \$19,757,874, and in 1914 to \$11,648,314. The amount carried to surplus amounted in 1910 to \$57,826,381, in 1913 to \$45,955,296, and in 1914 to \$33,355,906.

Exhibit No. 6 showed that during the three-year period ending June 30, 1913, the roads had expended \$1,058,386,502.81 for additions, extensions, betterments and improvements to property. From this was deducted a total of \$391,855,197, as the cost of road purchased, to avoid the possibility of duplication, leaving a balance of over \$660,000,000.

Exhibit No. 7 showed that substantially one-third of this expenditure, or over \$221,000,000, was devoted to increasing efficiency and safety and to expedite train movements, the various classes of expenditures being grouped under 15 heads. For instance, it was shown that \$21,920,345 was expended for grade reduction and the elimination of curves; \$15,000,000 for yard improvements; \$6,500,000 for block signals, and \$17,971,000 for heavier rails.

Exhibit No. 8, introduced by Mr. Keefe, showed that 3,251 orders of state railway commissions in the territory involved have been issued since July 1, 1910, and 1,115 bills have been introduced and 208 laws enacted in state legislatures, relating to railway operation, during the sessions of 1911, 1912, 1913 and 1914. Mr. Sheehan said that the exhibit was introduced to show the general tendency of increasing burdens placed by commissions and legislatures upon the funds of the railroad companies, and that as to the bills introduced it was proposed to show that the same organizations which base their claims on the theory of increased productive efficiency are seeking to have passed laws which make impossible the carrying out of the efficiency and economies that would result from the purchase of heavier power and the elimination of grades. He said that no attempt had been made to compile the cost of the various laws and orders, because it would be difficult to do so accurately.

Mr. Park remarked: "On the proposition that you can only run half a train it would be almost impossible, under certain conditions, to estimate the loss." Chairman Pritchard asked if there is a law of that character. Mr. Keefe said that train limit bills have been, or will shortly be, introduced in the legislature of Arkansas, California, Illinois, Kansas, Missouri, Montana, South Dakota, Utah, Washington, Colorado, Idaho, Ohio, Minnesota, Nebraska, Nevada, Oklahoma, Oregon, Wyoming and Texas, or 19 out of the 24 states embraced in this movement, and that there is a law in Arizona, passed in 1912, limiting the length of freight trains to 75 and of passenger trains to 14 cars. The proposed limit to the number of cars in a train ranges from 35 to 50 freight cars, and from 9 to 12

passenger cars. Mr. Sheean showed that on the Virginian Railway, where 100 cars of coal may be hauled on the level or down grades from the coal fields to tidewater, with one engine crew and one train crew, the effect of such a law would be to necessitate two engines, two engine crews, and two train crews to move the same traffic. Chairman Pritchard asked if helpers were not now employed on grades. Mr. Sheean replied in the affirmative, but said that whereas a helper crew may help all trains over a certain grade, which may be loaded to the tonnage rating on other parts of the line, the proposed law would increase the number of trains throughout the entire line.

Mr. Stone said it had not yet been decided whether to support the train limit bill in Congress, but when asked if all four railroad organizations are not supporting the bill in the states he said he did not think there was concerted action, except in some states, and that the engineers and firemen were not making an aggressive campaign, but that they would not oppose the bill if the other organizations wanted it. Mr. Sheean said the exhibit showing the number of laws and orders against railroads was not introduced in a spirit of criticism, but simply to advise the board of the situation, "that after the productive efficiency of labor and capital has produced some money, the public, through the legislature, reaches out immediately for a part of that money before there is either right or power to distribute it as between labor and capital."

Exhibit No. 9 was a comparison of freight and passenger traffic density. In 1910 the freight density was 735,828 ton-miles per mile of line, and in 1913 it was 820,851. In 1910 the passenger traffic density was 116,463 passenger miles per mile of line, as compared with 111,214 for 1913.

Exhibit No. 10, which was introduced in answer to the claim of the men that longer trains required them to put in longer hours in getting a train over the road, showed that in October, 1910, 77.24 per cent of the train-miles in through freight service were paid for on the mileage basis, that is, they were operated at a speed greater than 10 miles an hour, while in October, 1913, the percentage was 78.3. In the local freight service in October, 1910, 31.42 per cent of the train-miles were on a mileage basis, while in October, 1913, 30.62 per cent were on a mileage basis. Similar figures for other classes of service showed that in general the speed of the trains was greater in October, 1913, than in October, 1910. Therefore, Mr. Keefe said, if the men are handling heavier traffic and are operating larger engines which take a higher rate of pay than the smaller engines, they are receiving a larger sum of money for a slightly decreased number of hours than in 1910.

Exhibit No. 11 showed the reduction in time on the road.

Exhibit No. 12 showed that for the calendar year 1913, of the 2,277,749 passenger trains run, 910, or .04 per cent, were on the road for more than 16 hours. The "other trains" run during the year numbered 3,671,886, and of these 33,978, or .93 per cent, were on the road for more than 16 hours. Of the total of 33,978 "other trains" that exceeded the 16-hour limit, 19,910 were on the two Canadian roads, which are not affected by the 16-hour law and on which there is no limitation other than the desire of the men as to when they shall tie up. For all roads 540 passenger trains were tied up on account of the 16-hour law and 34,951 other trains.

Exhibit No. 13 showed the extent to which the railways are now making payment to engineers and firemen for which no actual service, either in miles or hours, is given by the men, because neither the hours nor the miles called for by the schedule can be required of the men in practical operation, as where an engineer runs 80 miles in 7 hours, and is allowed 100 miles as a minimum. In 1913, \$269,303 was so paid in passenger service, \$1,084,373 in freight service, and \$49,362 in work train service, making a total of \$1,403,038 paid to engineers and firemen for no equivalent in miles or hours.

Exhibit No. 14 showed the number of locomotives of various

weights on drivers in service in 1910 and in 1913. This showed a decrease in percentage of the smaller class of engines, also a decrease in engines between 80,000 and 100,000 lb. on drivers, a slight decrease in engines between 100,000 and 140,000 lb., and a general tendency to increase the size of locomotives only in the intermediate classes between 140,000 and 225,000 lb. This exhibit also showed that in 1913 there were 2,908 more locomotives than in 1910, an increase of approximately 12 per cent, and an increase in the number of oil-burning locomotives from 3,048 to 4,148, or 36 per cent, and that in 1913 the percentage of oil-burning locomotives to the total was over 15 per cent. The exhibit showed that about 15 per cent of the engines would require two firemen under the request. In 1910 there were 456 locomotives, weighing from 200,000 to 225,000 lb. on drivers, and in 1913 there were 1,577. In 1910 there were 167 locomotives, weighing from 225,000 to 250,000 lb., and in 1913 there were 423. In 1910 there were 82 locomotives, weighing from 250,000 to 300,000 lb., and in 1913 there were 89. In 1910 there were 163 locomotives, weighing from 300,000 to 400,000 lb., while in 1913 there were 304. In 1910 there were 7 locomotives, weighing 400,000 lb. on the drivers, and in 1913 there were 67. Mr. Stone asked that figures be presented showing locomotives ordered or received during the past year, saying he thought they would show a larger increase in the heavier engines.

Exhibit No. 15 showed that of a total of 27,221 locomotives, on November 1, 1914, 4,272 were oil-burners, 4,852 were equipped with superheaters, 9,512 with brick arches, 1,033 with power coal pushers, 4,098 with hopper bottom tenders, 50 with power stokers, 3,597 with automatic door openers, 192 with power grate shakers, 1,613 with power reverse gears, and 22,941 with improved ash pans. Mr. Keefe said that the exhibit showed that the larger locomotives are the ones on which the labor-saving devices are more generally being applied.

Exhibit No. 16 was presented to show that the density of population per mile of railway is less in the Western district than in the East, and that the density is increasing faster in the East than in the West and Southeast.

Exhibit No. 17 showed the proportion of single track, main track, and sidings to the area of the country served, for the roads involved.

Exhibit No. 18 showed the proportion of branch line mileage, ranging from 7.6 per cent to 59.95 per cent. The total was 43.65 per cent of branch line mileage, with 19.34 per cent of the total train-miles operated over branches, and 7.7 per cent of freight ton-mileage operated over branches.

Exhibit No. 19 showed that in 1910 the average freight trainload in the Western district was 325.9 tons, while in the Eastern district it was 459.8 tons, and in the Southern district it was 324.2 tons. In 1913, taking the trainload in the Western district as 100 per cent, the East was 140 per cent and the South 102 per cent.

Exhibit No. 20 compared the tractive power of locomotives.

Exhibit No. 21 was a comparison of the wages of engineers and firemen with those of employees in the marine service of the railroads and of steamship lines. Mr. Stone asked a number of questions regarding the conditions of employment for men in marine service. He said he had noticed that the captain of a boat usually sat at the head of the table, and that the most beautiful woman passenger had the seat of honor on his right. He asked the witness: "Do you know of any of the beautiful women passengers on these Overland Limited passenger trains that are riding in the cab with the engineer?"

Exhibit No. 22 presented a comparison of the wages paid engineers and firemen with those of other employees in transportation service. This was prepared during the hearing in response to a request by Mr. Nagel, who said that "in considering what should properly be paid to engineers and firemen we must have regard for what ought to be paid to other employees." Mr. Nagel expressed great interest in the figures for telegraphers.

Exhibit No. 23 presented similar comparisons for shop employees.

Passenger engineers for the month of October, 1913, were shown to have earned an average of \$7.80 per day of seven hours, or \$1.12 per hour. Engineers in through or irregular freight service averaged \$7.54 per day and \$170.02 per month, while engineers in local or way freight service earned \$7.16 per day and \$172.40 per month. Firemen in passenger service averaged \$4.96 per day and \$115.53 per month, while those in through or irregular freight service averaged \$4.99 per day and \$110.25 per month, and those in local or way freight service averaged \$4.80 per day and \$105.59 per month. One engineer in this month earned \$341.60 in passenger service, while another in freight service earned \$358.70. One fireman in passenger service earned \$209.89, while in freight service one fireman earned \$221.05. Mr. Keefe said that there were a number of engineers and firemen, as well as hostlers, who could have earned even more had they availed themselves of the opportunity presented by the companies for earning wages. He said he had not undertaken to show whether or not the men were actually available for duty the entire day. Of all the engineers in passenger service in the month of October, 1913, the summary showed that 4,478 earned \$170 or over per month, and of these 2,842 earned \$200 or over. Of all engineers in through or irregular freight service 5,560 earned \$150 or over, while of this number 1,430 earned \$200 or over per month. Of all engineers in all services 18,197 earned \$150 or more, of which 4,019 earned \$200 or more. Three engineers were shown who earned from \$358 to \$366.65 in a single month. In comparison with these figures Mr. Keefe showed that captains of steamers in the trans-Atlantic or trans-Pacific service are paid a maximum of \$275 a month, and a minimum of \$140. The chief engineers of these steamers, he said, averaged about \$150.

Mr. Stone objected to average figures, although his witnesses had done a good deal of "averaging." "Averages do not mean anything," he said. "If one man can eat five meals a day, the second four meals and the third three meals the fourth man cannot be made to believe he has had three meals because that is the average eaten by four men."

A controversy regarding the employment of negro firemen on the Yazoo & Mississippi Valley was interjected into the hearing by W. S. Carter, president of the Brotherhood of Locomotive Firemen and Enginemen. The railroads, in Exhibit No. 3, had presented no figures regarding wages of firemen on the Yazoo & Mississippi Valley, saying that most of the firemen on that road were negroes and were not members of the brotherhood or parties to the arbitration proceedings. Mr. Carter made a heated speech, demanding that any arbitration award be applicable to the Yazoo & Mississippi Valley, and presented a petition signed by 132 firemen of that road, most of whom were negroes, asking the brotherhood to represent them. He said the roads were seeking to evade the application of any award that might be made to that road. Mr. Sheean said that this was an effort on the part of the brotherhood to "root the negro fireman out of his job" by forcing the same wages for negroes as for white men. Mr. Carter admitted that the probable result of any application of the award to the road would be to replace the negro firemen with white men, but insisted that that would be the fault of the road and not of the organization, "because they only hire negroes because they are cheaper."

"Then how did you induce the negroes to sign this petition?" asked Mr. Nagel. "What actuated the negro to sign this petition when he knows that will deprive him of his job?" "I do not think he knows it," replied Mr. Carter. C. V. McLaughlin, vice-president of the brotherhood, later testified that he had secured the negroes' signatures to the petition without explaining that they might thereby lose their jobs. Mr. Carter offered, however, to join in a petition to the officers of the Yazoo & Mississippi Valley not to discharge the firemen. "If the railways raise the question of the right of the brotherhoods

to represent all, whether or not members of the organization," said Mr. Carter, "we shall be forced to demand a closed shop."

In response to a request from the engineers' and firemen's organizations, the railways produced W. W. Thompson, formerly an engineer on the Chicago, Rock Island & Pacific in Oklahoma, who denied on oath any recollection of having ever jumped from his locomotive under a surprise test and breaking his collar bone. Fireman Modenbach, working on the Rock Island in Oklahoma, testified several weeks ago that one of these tests resulted in his engineer, W. W. Thompson, and himself jumping from the engine, the engineer breaking his collar bone and being laid up for several weeks. After a long search the roads finally located Thompson, and, as requested by the two organizations, brought him to Chicago to testify. Mr. Sheean read the Modenbach testimony and asked the witness if he had any recollection of the things described, which the witness swore he had not.

On Friday, January 29, the railroads introduced in evidence an exhibit consisting of 18 sets of 3 volumes each, resembling enlarged editions of the unabridged dictionary, containing a duplication of the payrolls of the 64,000 engineers, firemen and hostlers on 98 Western railways involved in the arbitration for the month of October, 1913, and giving information as to the kind of service in which each man was employed, the terminals between which he ran, the number of days he worked, the number of trips he made, the miles he covered and the hours he spent on duty, with the exact amount of wages he received. It was shown that engineers in regular passenger service earn from an average of \$185 to a maximum of \$341.60 per month; in freight service from an average of \$170 to a maximum of \$358 per month. Firemen in regular passenger service earn from an average of \$115 to a maximum of \$209.89 per month, and in freight service from an average of \$110 to a maximum of \$221 per month, while other firemen in combination freight and passenger service earn even higher than this. The volume contained the records of 28,446 engineers, and page after page of the exhibit was shown on which the majority of engineers were reported as earning in excess of \$200 a month. Records were also presented of 32,321 firemen and 2,688 motormen, helpers and hostlers.

PULLMAN UPPER BERTHS

[From the Rock Island Employees' Magazine]

Many travelers are prejudiced against upper berths in Pullman sleepers, and many of our ticket agents thoughtlessly assist in keeping alive this prejudice. This is done, to some extent, by stating to travelers to whom a lower cannot be assigned, "There is nothing left but an upper," or "I can only give you an upper," leaving an impression in the traveler's mind that an upper berth is inferior or undesirable.

Would it not leave a better impression, in case the passenger's wish for a lower berth cannot be complied with, to say, "The lowers are all taken, but I can assign you a choice upper berth. The rate is 20 per cent cheaper than the lower." The traveler may at once see that, considering the differences in the rate, an upper berth has perhaps an advantage over the lower. Then a few words of explanation as to other advantages of the upper berth may decide the matter favorably with the prospective passenger.

In the more recently constructed Pullman sleepers, upper berths are now furnished with protection guards, precluding the possibility of falling out of the berth. Reading lamps are also provided in uppers, as well as lowers, and the aisle lamps are under individual control, doing away with the annoyance of unnecessary light. The ventilation in upper berths is also of the best, and for that reason alone many travelers prefer them.

As only a limited number of passengers can be accommodated in Pullman sleepers, every effort should be made to dispose of the uppers, as well as the lowers.

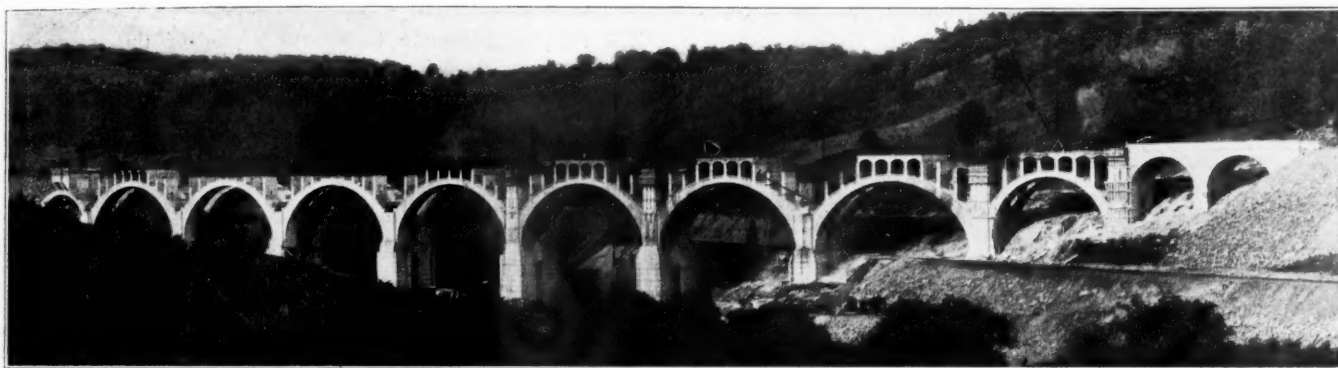
Progress on Summit Cut-Off of the Lackawanna

A Description of the Present Stage of Construction of World's Largest Concrete Bridge and a 3,630-ft. Tunnel

It is expected that the new three-track line of the Delaware, Lackawanna & Western between Clark's Summit, Pa., and Hallstead, on which some unusually heavy work has been under way for the last three seasons, will be ready for operation by December 1 of this year. This cut-off of 39.6 miles is being built at a cost of about \$12,000,000 to reduce the distance 3.6 miles, the maximum grade eastbound from 1.23 per cent uncompensated to 0.68 per cent compensated and westbound from 0.52 per cent uncompensated to 0.237 per cent compensated; and the maximum degree of curvature from 6 deg. 22 min. to 3 deg., to eliminate 327 ft. of rise and fall and 2,440 deg. of central angle,

This double track viaduct consists of ten 180-ft. and two 100-ft. arches with a total length of 2,375 ft., and a height of 242 ft. from stream bed to top of coping. These dimensions with the concrete yardage of 167,000 make it the largest structure of its type in the world.

The method of sinking the piers to rock at a depth of 10 ft. to 95 ft. below the ground line and the construction of these piers above the ground to the top of the umbrella section 37 ft. above the springing line were described in the *Railway Age Gazette* of December 5, 1913. At present all of the substructure has been finished except pier 5, which has been de-



A General View of Martin's Creek Viaduct Which Is Now Completed

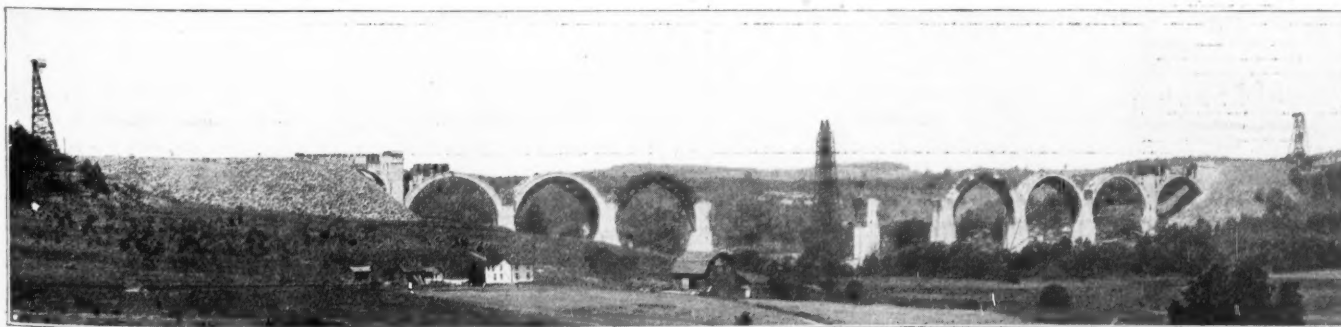
to add a third track and to abolish all grade crossings. As the maximum train loading is fixed by the grades on the remainder of the engine district, no increased tonnage will be made possible by the improvement, but an important saving in mileage of helper engines and in running time over this portion of the line will be effected. The reasons for this work were fully covered in the *Railway Age Gazette* of April 25, 1913, and November 14, 1913.

GENERAL

The construction of this line required the excavation of 13,318,000 cu. yd. of material. The interesting methods of han-

layed by serious difficulty with quicksand. A comparatively slight delay was caused by a pocket of quicksand at one corner of pier 4, but as the material at the other end was solid, it was possible to divide the area, finish one end and then brace against the concrete to hold back the pressure of the soft material.

In pier 5, a stratum of quicksand extending over the whole area of the cofferdam was encountered about 75 ft. below the surface and 20 ft. above the rock. An attempt was made to drive sheeting inside the caisson to divide the area into 24 parts, each of which could be finished separately, but this sheeting was bent and displaced by boulders overlying the rock,



A General View of the Tunkhannock Creek Viaduct Under Construction

dling this heavy grading work were described in the second article referred to above. The grading is now about 85 per cent completed and about 25 per cent of the track has been laid.

The small bridge work is practically completed, and the last concrete in the Martin's creek viaduct, one of the two large structures, was poured on November 14. The 12-span concrete arch-bridge over Tunkhannock creek, which is the largest structure on the line, will, probably be the last work completed.

making this method impracticable. It then became necessary to use a pneumatic caisson which was built in two chambers with two locks in each. The caisson was constructed with the cutting edge 27 ft. above rock; air was turned on December 13, and the caisson had been sunk 10 ft. on December 21.

DESIGN OF CONCRETE ARCH VIADUCTS

As stated in the previous article, the substructure in reality includes the piers and the umbrella tops forming the skew-

place by a mastic filling. The waterproofing is carried continuously over this plate. A parapet wall with an overall width of 3 ft. 4 in. extends 7 ft. 3 in. above the floor at the crown of the spandrel arches and the pilasters extend 3 ft. above the top of the parapet.

The general design of the Martin's creek viaduct is similar to the Tunkhannock creek bridge, except that it will carry three tracks and that seven of the eleven are 150 ft., three-centered arches, consisting of two ribs 17 ft. 6 in. wide with an open space of 12 ft. between ribs. The spandrel arches are flattened to conform with the appearance of the main arches. The total length of this structure is 1,600 ft., the base of rail is 150 ft. above the stream and 78,000 cu. yd. of concrete were required in its construction.

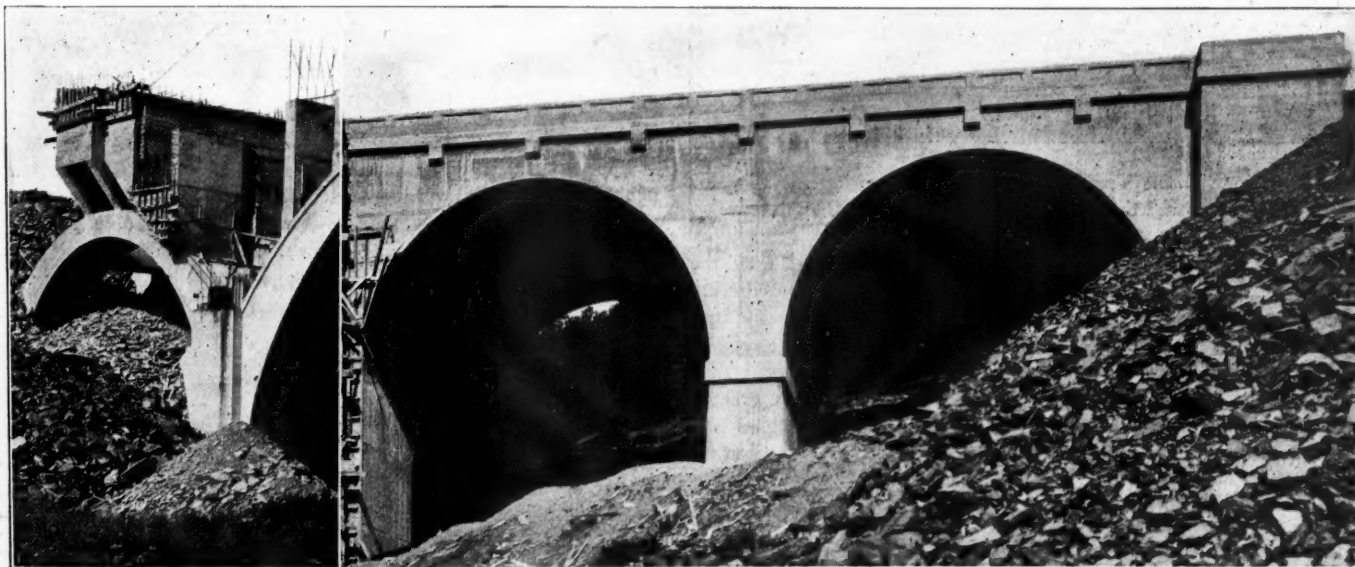
CONSTRUCTION OF CONCRETE ARCH VIADUCTS

The contractor's methods adopted in building the superstructures of the two large viaducts were practically the same, so that a description of the work on the Tunkhannock bridge will apply in general to the Martin's creek structure as well. As mentioned in the article on the substructures referred to above, all form material and concrete at Martin's creek were handled by derricks, while at Tunkhannock a combination of

maximum horizontal reaction at the lower skew back pins of 261,100 lb. During the lateral movement of the centers the thrust resulting from the weight of the trusses and lagging is taken by two 1 in. rods connecting these pins. The wind load on the forms is taken by four 1 3/4-in. anchor bolts extending into the concrete bench on each side of the pedestals. As an added precaution, the contractor used two 3/4-in. steel cable guy lines from the crown of the centers.

The four arch trusses in each set are supported by a pedestal 16 ft. 7 in. long. In order to provide for the side movement from one arch rib to the other, the base plate under this pedestal is provided with a guide rib 1/2 in. by 2 1/2 in. which engages the shoulders of 6-in. rollers running on a bottom grillage. This grillage is 35 ft. 6 in. long, consisting of four 8-in. I-beams with top and bottom cover plates, the former having a guide plate to engage the rollers similar to the one on the pedestal.

The 3 1/2-in. lagging is carried on planks set on edge over each rib with their outer edges curved to conform to the intradosal line. As the top pin is 6 ft. below the crown of the arch, the lagging for one panel length on each side of the crown is carried on a rigid triangular frame above the top chord sections. The adjacent members of these frames over the pin are about



The Abutment Span Before Completion and the Two Short End Spans of the Martin's Creek Bridge

derricks and a double cableway is being used. The center tower of this cableway was 260 ft. high for the early stages of the work and was later raised by a 40-ft. addition in accordance with its design. Two duplicate concrete mixing plants at Tunkhannock and one at Martin's creek, each with a capacity of about 40 cu. yd. per hour, were provided.

With the exception of the abutment spans in both structures, for which wooden centers supported on wooden towers were used, the arch rings were built on self-supporting steel arch centers. These were seated on benches on the sides of the piers, which in the Tunkhannock bridge are 4 ft. 3 in. wide and 17 ft. 6 in. below the springing line. The spandrel arch centers and all forms are of wood. Five sets of arch centers are used, each of which supports a single main arch rib. After the construction of one rib in a span the centers are moved over under the other rib in the same span and used again without dismantling. In order to utilize both material cables at the same time, the centers are erected on alternate sides in adjacent spans.

Each set of steel centers consists of four three-hinged arches spaced 3 ft. 10 in. center to center and thoroughly braced. The assumed loading on these centers, including the weight of the trusses, lagging and forms, is 1,370,000 lb., which produces a

2 ft. apart at the crown, an oak block being supported in this space by bracket angles to carry the lagging over the joint.

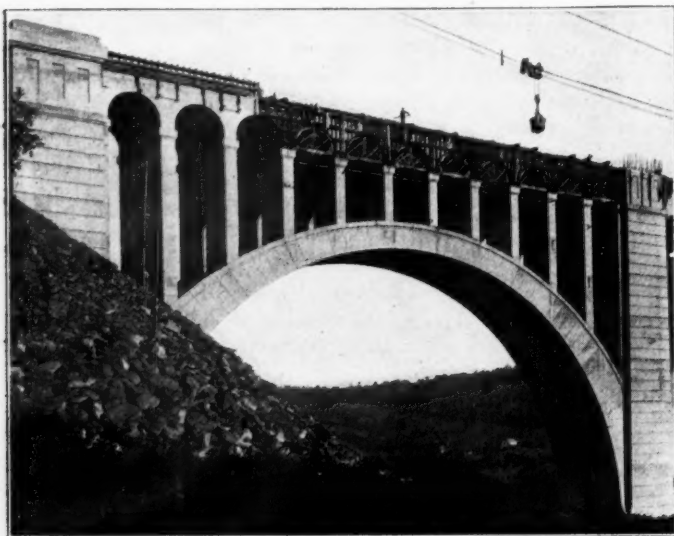
The adjustment of the height of the centers necessary to strike them before removal is accomplished by changing the length of the diagonal members of the two panels adjacent to the crown. Pin connections are used in these panels to make this possible and the diagonals are each made in two pieces connected by bolts with left and right handed threads.

The centers, which have a total weight of about 200 tons, are erected by the cableway, each rib being handled in four pieces. The lower half of each semi-truss is erected first and held in position on the skewback pins by two temporary bolts through gas pipe sleeves in the concrete of the umbrella tops which bear on washer plates at the upper ends of the pipes and support a short I-beam yoke under the upper chords of the trusses. The upper halves are then erected and bolted to the lower sections, the entire semi-trusses being supported as cantilevers from the piers until the crown connections are made, converting them into three-hinged arches.

After the completion of the first rib, the centers are struck and are then jacked over on the grillage, a distance of 20 ft., to bring them under the second rib. After this rib is concreted and set, the centers are again struck and rolled into the space

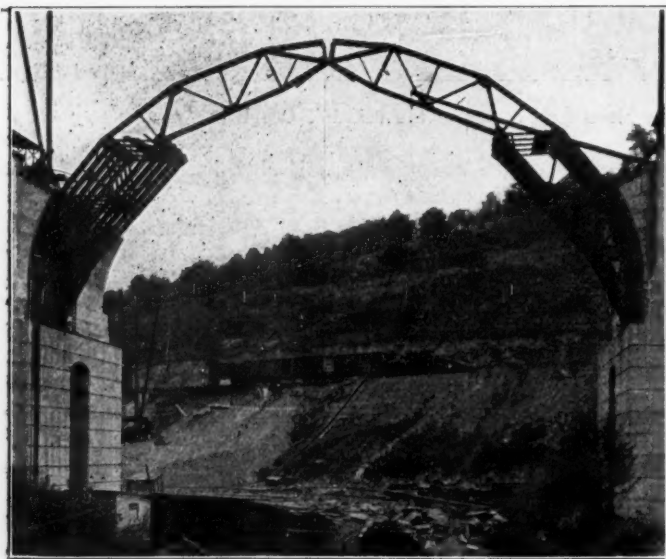
between ribs where the segments can be removed one at a time by the cableway for erection in another span.

Each arch rib consists of 11 voussoirs and the necessary connecting key sections. The corresponding voussoirs on opposite sides of the arch are concreted simultaneously, and after the last one is placed a set of seven days is allowed before the keys are put in. Separate forms are provided for the voussoir blocks and the key sections allowing the former to be removed for use on another span while the keys are being placed.



The End Span of the Tunkhannock Viaduct Showing the Pilasters at the Piers and the Spandrel Arches Partially Completed

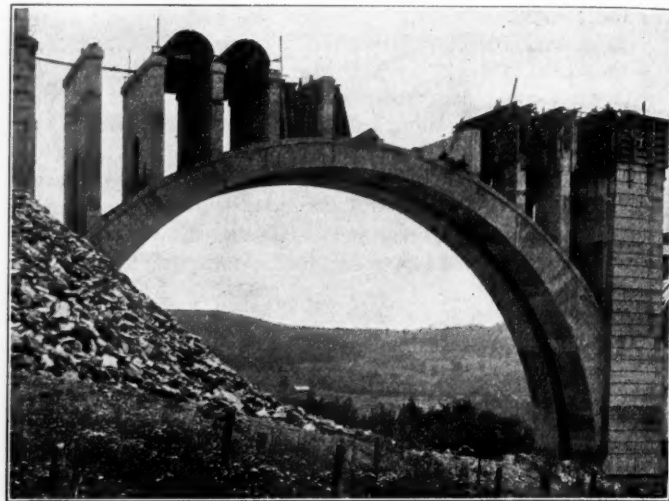
All the concrete is handled in bottom dump buckets by the cableway from cars pulled by dinkey engines from the mixing plant. In most cases these buckets are dumped directly into the forms, but in the case of the spandrel walls for example, where the width of forms is not great enough to permit this, dumping platforms are used. A stiff-leg derrick was erected on the finished floor as soon as one section was completed and is moved out as the work progresses to handle the spandrel



Erection of the Steel Centers for One Span at Martin's Creek in Progress Showing Details of Crown Connection and Adjustable Members in the Top Panel of Each Semi-Truss

arch forms from under the completed floor at the sides of the bridge, thus obviating the necessity for using the cableway for eccentric loads. In hot weather each floor section is kept

flooded until it has set, and in cold weather a tarpaulin cover is provided and a steam pipe run in to heat the surface. The lower section of the parapet walls up to the first offset on the

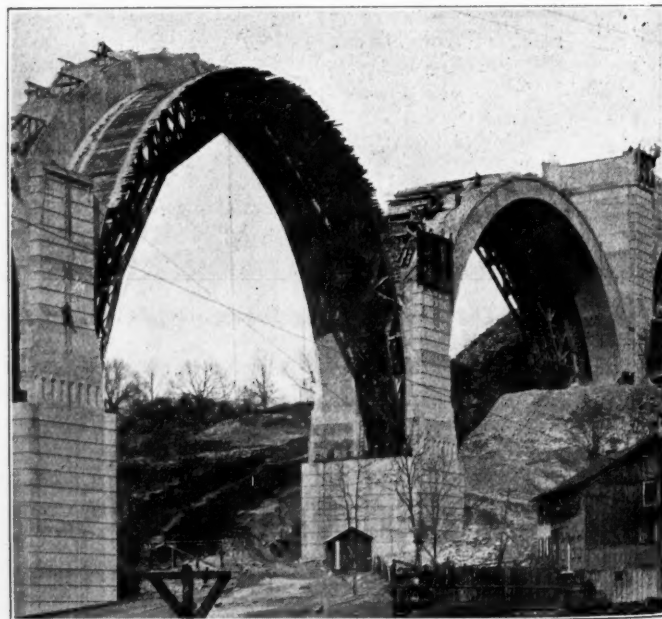


A Construction View at Tunkhannock Creek Showing Forms in Place for Spandrel Walls, Arches and Pilaster

outer surface is cast with the floor in order to avoid the appearance of a construction joint.

THE NICHOLSON TUNNEL

The excavation in the double track tunnel 3,630 ft. long near Nicholson, amounting to 146,000 cu. yd. was completed about the first of November, and work is now in progress on the lining of this bore, 1,600 lineal ft. of lining having been



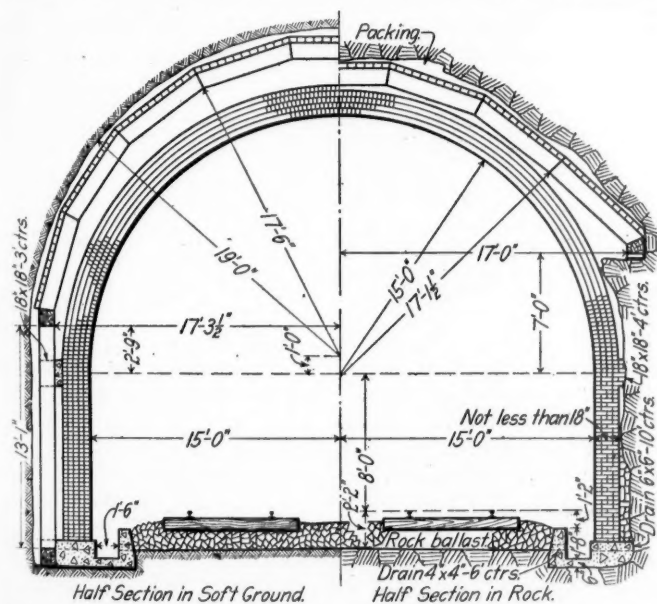
Two Spans of the Tunkhannock Viaduct in Each of Which One Rib Has Been Finished and the Centers Are Now in Place Under the Second Rib

completed. As mentioned in one of the previous articles, two shafts were driven at the third points in order to advance the work before the completion of the portal cuts, which are about 100 ft. deep, and one of which contains over 1,000,000 cu. yd. of material.

Center top headings 9 ft. by 12 ft. were driven in both directions from each shaft and also in from the west portal as soon as the cut at that end had progressed far enough to

make this possible. These headings were later widened to allow the placing of the wall plates and the 12 in. by 12 in. roof timbers, which were spaced 4 ft. center to center. The remainder of the section was excavated by a single pass of a 40-ton Marion shovel operated by compressed air. The material was shot down ahead of the shovel in two benches, the upper having a face of about 6 ft. and the lower about 12 ft. The shovel loaded the material into 6-yd. cars operated in trains of 10 by dinkey engines burning hard coal.

Two tracks were provided in the tunnel for this narrow gage equipment with a switch about 200 to 300 ft. from the working face. A train of empty cars would be pushed up to this switch on one of the tracks and the loaded cars collected by another engine on the other track. The first engine would push in two empty cars to the shovel, run back of the switch, the second engine would come up and pull out the two cars as soon as loaded, and the first engine would then set in two more. By the time the loaded train was ready to leave, another train of empty cars would arrive and the process be continued, always having two engines at the shovel to switch the cars. The haul varied from $\frac{1}{2}$ mile to one mile from the portal. The shovel completed the excavation in 350 days elapsed time,



Typical Cross Section in Earth and Rock of the Nicholson Double Track Tunnel

making a progress of about 12 ft. per day of actual working time.

Three compressors located in a plant at the west end supplied air for the shovel and drills, the 10-in. air main being carried for a maximum distance of about one mile. A generator located in the compressor plant furnished electricity for lighting the tunnel during the placing of the lining, although large carbide torches and individual gasoline lights were used until the completion of the excavation.

The tunnel is being lined with vitrified brick which has been shown in extensive tests to have a high compressive strength and resistance to corrosion. The estimates showed that a concrete lining could be placed for about 60 per cent less per cubic yard than the brick, but the yardage is decreased by using the brick so that the comparison of the total costs does not show as great a difference. The proximity of unusually good supplies of brick was a factor considered in this case. The side bricks are obtained in Corning, N. Y., and the arch bricks in Scranton, Pa. The bricks are of two sizes, those in the side walls being 2 1/4 in. by 4 in. by 8 3/4 in., and those in the arch 2 3/4 in. by 4 in. by 8 in. The lining is four courses thick, except in the short section of earth near the east end, where a fifth course is added.

The brick lining is carried on a concrete footing which is extended toward the tracks to form an open drain 18 in. wide and 12 in. deep. The thrust of the arch is taken by 18 in. square thrust blocks of brick at the springing line, spaced 4 ft. center to center. The space above the ring and behind the side walls is back-filled with selected rock, and 6 in. by 6 in. drains through the concrete footings at intervals of 10 ft. afford an outlet for any water collecting behind the lining. In the east approach cut where the grade is descending toward the tunnel, a vitrified pipe line for drainage will be laid with a grade sloping away from the tunnel. So far no difficulty has been encountered with water, and none is anticipated.

The concrete footings are built in 15-ft. form sections, the concrete being mixed at the top of one of the shafts and lowered by a derrick. A crusher was installed here to supply crushed stone for this concrete, using the rock removed from the tunnel. The output of the crusher was also used for the concrete in a small culvert near by.

The brick arch is being built on four 32-ft. sections of centering which are moved forward on wheels. Bricks are laid in 1:2 cement mortar mixed by an electrically operated Ransome mixer in the tunnel. A motor-driven conveyor is also used to elevate the bricks and the mortar to the working platform of the centering. The mason gang employed at present on this work can average 1,500 to 2,000 bricks per man in an eight-hour day.

The plans for this cut-off line and the construction work have been handled under the supervision of G. J. Ray, chief engineer. The designs for the large concrete arch viaducts were made by A. B. Cohen, concrete engineer. All field construction work is directed by F. L. Wheaton, engineer of construction, the residency including the Tunkhannock viaduct, the Nicholson tunnel being in charge of C. W. Simpson, resident engineer.

LAFAYETTE YOUNG ON GOVERNMENT OWNERSHIP

[From the Des Moines Capital]

The railroads are out of politics. In a political sense they are boycotted. Prove that a man is subservient to railroad influence and his defeat is certain. The conditions are much better because these achievements have been had.

Therefore, we cannot agree with Dr. Frank Crane in his desire to put all the corporations into politics. He wants the railroads, tramways, telephone and telegraph lines, and all other systems of transportation; all water-ways, all electricity, gas and the like put under the ownership of the government.

The editor of The Capital has been in nearly every country in the world, and we can say truthfully that the telegraph and telephone lines, also the railway lines, are better managed in the United States, and give better service than in any country in the world where government ownership prevails. The charges in the United States are not excessive.

In a republic where the majority rules, and the majority are in the government employ, what are the other people going to do? We very much fear that under universal government ownership American politics would become so corrupt that the government itself would go down under the weight.

Government ownership is justifiable only when private ownership everlastingly fails. Some arguments could be put up for government slaughter and packing houses; even for flouring mills. But when the transportation business is well managed, why put millions into it?

We venture the statement that very few businesses in America have been destroyed by transportation charges.

Dr. Crane points to higher conditions morally, and anticipates an appreciation of responsibility upon the part of everybody, which is not at present warranted by the facts.

The Practical Problems of Terminal Operation*

Some Seemingly Unimportant But Nevertheless Vital Considerations in Successful Yard Management

THE PROBLEM OF THE OLD YARD

By G. G. BUTLER

Southern Railway, Washington, D. C.

Success in yard operation cannot be secured in a day, neither does it come overnight, but rather it is the reward of concentrated thought and study of all the multifarious conditions which exist and arise between the two yellow boards which mark its geographic limits. While it has been the tendency in later years to spend much time and thought in planning the layout of new yards, into which many mechanical innovations and new ideas have been introduced, the vast majority of yards throughout the country still retain their original characteristics with new tracks and facilities added from time to time. It is in these yards of meager and inadequate facilities that the greatest personal effort is required and most generally the least credit or glory to the yard organization is given, for it seems to be the rule that as viewed from the chief despatcher's table or the chief clerk's desk, the yard that handles the greatest bulk of traffic and does not become actually blocked in so doing, regardless of the disparity in its facilities, is the better conducted yard. Yet a careful study of conditions and a fair comparison of merits and values might cause a reversal of opinion.

However, the essential qualifications of the yardmaster in either yard are measured by the same rule. Each must serve his employer, the public. The public employs the company and the company employs the yardmaster, and so the latter has a dual responsibility in all that he does. The yardmaster is one of the closest mediums of contact between the company and the public and he therefore has it in his power to do much for or much against either one, or both. When he fails or neglects his service to the patron he may expect a complaint, which usually means his appearance on the "carpet," and of course, an excessive number of attacks of that malady are not conducive to his continued signing of the payroll.

The man who has never come in close contact with the whines and complaints that can and do arise in a busy industrial yard has missed an education in itself. It therefore behooves the yardmaster to make the personal acquaintance of every patron enjoying private siding facilities and of his underlings who have any control over that part of the business. The yardmaster will therein find much to his advantage and the patron will benefit likewise. But the essential qualification of a man in charge of any yard is that he know his business and that he have the moral courage to insist upon that which is right. He then commands the respect of all with whom he deals, from the most exacting patron to the junior call boy. He must have substantial authority over his men and be a firm but just disciplinarian. He must co-operate closely with the other departments, especially the mechanical and the despatching. Much is to be accomplished by a pleasant working relationship between these two. I have found that when the yard men make an honest effort toward co-operation they are usually met half way, but when they fail to switch the store house cinder pit, sand house or coal pocket, it is not to be marvelled that a regular engine is shopped and an old "scrap heap" is furnished to worry through a day's work. Too much cannot be said of co-operation with the despatcher, for the two departments are more frequently at odds than working harmoniously, the yardmaster striving to get trains out and the despatcher trying to get trains in.

Of primary importance is the watching of yard expense. With a heavy and favorable run of business it is of course less difficult to make a "showing" than under conditions of the

reverse nature. The fixed expense of the yard, including the yardmaster, his assistants, clerks, etc., will generally remain the same and superior officials are less inclined to ask a reduction in this expense then they are to want an engine discontinued. While regular switch engine schedules, with regular crews, are conducive to the best general economic results, there are times when the yardmaster would be extremely derelict were he to allow them all to work. He should closely watch the prospective movement and arrange his forces in such a way as experience has taught him will cover all requirements and at the same time permit of no waste of power. Whether he has done this conscientiously or not can be detected quickly by the superintendent in an examination of the "cost per car handled" and "cars handled per engine." In scheduling yard engines, it is well, if compatible with traffic requirements so to arrange their departing time from the engine house that at least one engine will be on duty at all times. I have never seen the yard so up-to-date but that it could not find something to keep the locomotive employed and there is thus always an engine ready to protect any emergency.

OPERATING EXISTING YARDS A PRACTICAL NECESSITY

By M. A. MULLIGAN

Trainmaster, Lehigh Valley, Jersey City, N. J.

As a general rule railroads have been compelled to utilize the same yards and terminals to take care of the increased business, although the rolling stock and equipment have been greatly increased and improved, and operating methods have been revolutionized to meet the intense tonnage and time requirements. The fact is, the relocation or radical reconstruction of yards and terminals involves too great an expenditure to be considered by the already overburdened railroads. Therefore, we must disregard the theorist, with his ever-ready suggestions for ideal yard and terminal layouts, and turn to the practical railroad man for a solution of the difficulties which beset the operation of our existing yards. The importance of the part played by yard and terminal facilities cannot be overestimated, as they are not only the distributing points for a railroad's equipment, but also a controlling factor in the prompt movement of its tonnage. Present conditions demand that these facilities produce the maximum efficiency at a minimum cost.

The keystone of efficiency is organization. Therefore, careful consideration must be given to the selection of the officer charged with the duty of securing proper organization and infusing the proper *esprit de corps*. Unquestionably, he must be an experienced and practical man, familiar with railroad methods, and with a faculty of applying them to the best advantage. He must be able not only to plan a detailed organization that will fit all local requirements but must be qualified to instruct each man in his duties and to know when every man is doing his duty. He must also be a strict, but just disciplinarian. He should be qualified to go into a terminal and quickly grasp the details of its classifications and methods of working, discover any weak points in its organization and be capable of either educating or reorganizing the force, making such changes in rules and methods as may be necessary to insure a smooth-running machine, not only performing its own work promptly and economically, but operating efficiently and smoothly with connecting points.

A yard, and particularly an intermediate yard, is a necessary evil on a railroad, inasmuch as it produces no revenue. To reduce the item of yard expense to a minimum, for it cannot be eliminated, it is essential to keep cars moving, avoid unnecessary switching to enable all possible reductions in engine service

*Abstracts of several of the papers received in the Contest on the Operation of Terminal Yards.

and overtime, and facilitate the movements of inbound and outbound trains to prevent congestion.

A yardmaster should keep himself familiar at all times with the trains in transit, as a guide for ordering power to handle the following day's business. All yards should classify their outbound freight, to avoid unnecessary switching and delays at other yards. If this is done it will only be necessary to switch and classify the cars originating at the intermediate yard, cars requiring shop attention and those brought in by pick-up trains. These can be assembled in one section of the yard and made up in properly classified trains, without delay. This will not only avoid delay to local cars, but will also keep foreign cars moving and thereby reduce per diem charges. Sufficient road power must always be furnished to take away the cars promptly and keep the yards open properly to do their work. Similarly, yards should not be compelled to receive trains from one division in close succession and then be forced to wait for power to arrive from the connecting division.

Yardmasters should make arrangements with the roundhouse foremen to have engines furnished with proper supplies during the meal hour. In the case of double-crewed engines this can also be done at the meal hour, but the time of boarding should be arranged so that crews are spaced one hour apart night and morning, dividing them to conform with the roundhouse organization. This will avoid paying a crew while the engine is being supplied. An emergency yard engine should always be kept available at a convenient point in the engine yard, to take the place of any regular engine that may have an accident or be disabled.

THE CAREFUL CARDING OF CARS

By JAMES M. FOX

Yardmaster, Southern Railway, Winston-Salem, N. C.

The first step toward the successful operation of a yard consists in maintaining complete and accurate records in the office. A record of all waybills covering carload shipments of freight received should be made before the waybills are passed into the agent's office. A record of all home route cards should also be kept, and the cards filed. This record will eliminate delay in preparing a duplicate card should one become lost. Cards showing initial and number, contents, consignee and date of arrival should be placed upon all cars as soon as received, and weigh-cards upon such cars as require scaling.

Loads on which the freight is not prepaid, also those billed "shipper's order," should be carded "hold" and placed on a track set aside for that purpose. The agent's office should notify the yard office when any of these cars are ready to be placed for unloading and a clerk can then apply the proper carding. The "hold track" should be switched as often as business demands, but not less than once a day.

When billing for outbound loads is delivered to the yard office, a list (or lists) should be made, showing the initial and number of each car with the contents, location and destination, and such lists should be furnished to the foremen working in the territory where the cars are located. Cards showing the same information should be placed on each car, and where weights are necessary, cards indicating this also should be applied.

Loaded cars bearing bad-order tags should never be placed on a repair track, if in the opinion of the yard foreman, the defect is such that it will not interfere with the movement of the car to the industry to which it is consigned. This is particularly true of shipments of livestock, merchandise and perishable freight. However, in a case of this kind, all parties should be instructed not to reload the car. Preferred handling in the placing of this high class freight should never be deviated from; other freight should be placed as promptly as possible.

All cars consigned to the same industry should be kept together, and the oldest loads placed first, unless other instructions are issued. This is an easy matter where a perfect carding system is in vogue, and the foremen observe it. In the placing of cars on team or industry tracks, care should be used to push them in

as far as possible in order that any available space remaining will be adjacent to the main line. This will prevent disturbing any loading or unloading of cars on this track in case another delivery has to be made during the day.

A great saving is effected by keeping a close check on the number of crews necessary to properly handle current work. Forces should never be reduced so that industries will suffer for want of attention, but on holidays and days when the industries are idle, the number of crews may often be reduced. The matter of overtime should also come in for close attention and be reduced to a minimum.

All concerned should understand that the public is entitled to courteous treatment, and should act accordingly. The yardmaster should make it a point to visit each industry as often as possible, keeping in close touch with those in charge, and seeing that their wants are being satisfactorily attended to. An exhibition of such interest goes a great way towards keeping down complaints which otherwise arise, and gives the yardmaster the opportunity to keep in close touch with every angle of his work.

FREIGHT SOLICITORS A FACTOR IN YARD OPERATION

By O. C. HILL

Assistant Superintendent, Chicago, Burlington & Quincy, Kansas City, Mo.

Freight solicitors should be selected with care and should be thoroughly familiar with all the operations of the terminal in which they are located. They are securing business on the basis of service performed, and to be performed. They work so closely with the operating department that it is hard to tell where the traffic department ends and the operating department begins, as all operating men are virtually traffic men. The general agent should receive a consist of all freight destined for his terminal from the preceding terminal. This should be given to his different solicitors, so that they in turn can take up with the consignee and obtain a prompt release on all shipments so that the cars can be carded direct from the train to the road or switching line that is to handle them to destination. By this means the handling will be direct and the cars will be kept in a regular channel.

The yardmaster must work closely with the roadmaster or general track foreman and must see that his assistants give the roadmaster and his foremen an opportunity to keep up the physical condition of the terminal to a high standard, as the length of time and the amount of work that can be turned out depends upon the condition of the tracks.

The secret of a successful yardmaster is having all of regular work well in hand at all times and then, when the necessity arises, he can deliver as the needs demand without affecting the movement of the regular business.

THE PUBLIC AND THE TERMINAL

By G. B. SCHRAND

Trainmaster, Chicago & North Western, Chicago, Ill.

Being public utilities, the railroads must be operated to the mutual advantage of the shippers and the owners. The public is continually demanding new concessions and greater rapidity in the handling of its business and naturally a freight terminal must conform to those demands and must adapt itself to their fulfillment. To accomplish the desired results, and to satisfy the public, we must have suitable facilities, able supervision and a balanced, experienced and loyal organization.

Granted that facilities are adequate, supervision and organization are next in importance. Supervision should be properly taken care of first and then we must work for a proper organization. In this organization we must not lose sight of economy and the proper distribution of forces, manual and clerical.

To facilitate car movements our company has adopted and is now carrying out successfully an embargo system which is controlled by an embargo bureau located in and operated in harmony with its Chicago freight terminal. The establishment of this bureau solved a big problem for our company.

General News Department

The receiver of the Buffalo & Susquehanna has been authorized by the court to continue the operation of the road until March 1.

A press despatch from Vera Cruz, Mexico, February 2, announced the re-opening of the railroad between that place and Mexico City, with a passenger train running through for the first time since November 19.

A petition was presented last week to the Kansas legislature, signed by several hundred persons in Labette, Coffey, Woodson and Sedgwick counties, asking that the legislature, during the present session, be lenient in the matter of anti-railroad legislation. "Drastic legislation will work no benefit to the traveling public," the petition stated, "and bills of this nature should be defeated."

Foley Brothers and the Northern Construction Company have begun suits at Toronto, in mechanics' lien proceedings against Mackenzie, Mann & Company to recover \$4,276,667 balance alleged due on a \$17,578,637 contract for the building of the Port Arthur-Sudbury section of the Canadian Northern Railway. Foley Brothers are incorporated under the laws of Minnesota.

The general offices of the National Railways of Mexico were recently moved from the City of Mexico to Torreon. All of the records of the company were moved, and the new offices are occupied by the full working force of clerks. There is some talk that the change may be made permanent, irrespective of the outcome of the revolutionary troubles, as Torreon is considered the logical operating center of the government-owned system.

The Secretary of the Interior has recommended to Congress an appropriation of \$2,000,000 for the use of his department in the work of building the proposed government railroad in Alaska. An appropriation of \$1,000,000 was made at the last session of Congress. The secretary has not yet reached any decision as to the purchase of the Copper River & North Western or the Alaska Northern, both of which roads may be included in the proposed government system.

Representatives of engineers', firemen's, conductors and trainmen's brotherhoods have been holding conferences with the management of the San Antonio, Uvalde & Gulf, protesting against a proposed reduction in the wage rates of employees on the road, which the road had announced would become effective February 1. The road proposed to reintroduce the scale which was in effect about a year ago. Since that time most of the employees have received advances which the road now says it is unable to pay on account of decreased revenues.

The American Museum of Safety, William H. Tolman, director, will make its annual award of medals next Wednesday evening, February 10, at 8:30 o'clock, at the United Engineering Societies Building, 29 West Thirty-ninth street, New York City. The E. H. Harriman Memorial medal for the American steam railroad, which during one year has been the most successful in protecting the lives and health of its employees and of the public, goes this year to the New York Central. The Anthony N. Brady medal, for a similar purpose, awarded to an electric railway, goes to the Boston Elevated.

The Baltimore & Ohio, the Erie and the Pennsylvania, and presumably all of the other principal eastern roads have put in effect the revised tariff of demurrage charges on refrigerator cars containing perishable freight, which has been under consideration for several months. The usual free time is allowed, two days; for the next three days the regular rate, one dollar a day; for the next three days \$3 a day, and thereafter \$5 a day. The new charge has received the endorsement of the National Industrial Traffic League, the National Poultry, Butter and Egg Association, Western Fruit Jobbers' Association, International Apple Shippers' Association, North Pacific Fruit Distributors and New York State Cold Storage Association.

Thomas W. Hulme, general secretary of the Presidents' Conference Committee for the Federal Valuation of Railroads, has issued a statement showing the manner in which the information required by the government regarding the acquisition of lands has been prepared in three separate instances in conformity with those requirements, as an example of the manner in which such information should be prepared. The three instances, all of which are on the Northern Pacific, include a 68-mile extension of a branch line in western North Dakota, where land was cheap and the road was desired by the residents; the acquisition of terminal property for a passenger coach yard in St. Paul, where about half of the land was secured before the identity of the purchaser became known; and an extension into a community in eastern Montana, which was already served by railway facilities and where the road was not desired by the farmers.

Theodore P. Shonts, president of the Interborough Rapid Transit Company, New York City, and also of the New York Railways Company, operating surface street railways in New York, has issued a pamphlet showing the unfavorable aspects of motor bus traffic in large cities; the purpose being to induce the authorities of New York to refuse franchises to operate motor omnibuses in the street. About two years ago applications were made for such franchises, and at once Mr. Shonts sent two of his men to London and Paris to study the transportation facilities of those cities, with particular reference to omnibuses and their effect on the fortunes of the city. This report is the result of the investigations thus made. The investigators declare that unlimited motor-bus competition in New York would seriously impair the traffic and income both of the subways and the street railways, while at the same time it would mean greater congestion in the streets, more street accidents and serious financial losses to the city, which owns the subway; and without commensurate benefit to the people.

Illinois Roads Begin Campaign for Increased Passenger Fares

The railroads of Illinois are going to try their case for an increase in passenger fares in the state in the court of public opinion, with "a campaign of candor." As a first step in the campaign, a committee of railway presidents called on Governor Dunne at Springfield on Wednesday to submit to the governor the intention of the roads to ask the people and their representatives for an amendment to the law of 1907, which reduced the maximum passenger fare from three cents to two cents a mile, so that the maximum rate may be restored to 2½ cents.

President Markham of the Illinois Central issued the following statement as to what the railroads want and how they propose to go frankly to the public to get it from the legislature: "Everybody knows there has been an increase in the cost of railway operation, without a corresponding revenue increase to offset it. President Wilson has indorsed the interest of the whole public in the proper maintenance and complete efficiency of the railroads.

"The Interstate Commerce Commission, after searching investigation, has found that a serious defect in the railroad situation and a drag upon proper maintenance and complete efficiency is the inability of the railroads to get a sufficient return from their passenger service. Citing the advance in passenger fares in New England, the commission has also expressed a belief that the public will acquiesce in similar action wherever it is shown to be necessary; that the people are willing to pay for the improved service they demand; and that an effort should be made, where two-cent laws are in effect, to secure an advance. As evidence of its own attitude toward passenger fares, the commission has recently accepted interstate passenger tariffs based on a rate of 2½ cents a mile in Illinois.

"The relief suggested by the commission can be had in Illinois only by consent of the people through their representatives in the state legislature, with approval by the governor.

"In consequence of this situation and of the commission's find-

ings, the railroads of Illinois have decided to present their case directly to the people. As the first step the presidents of Illinois railroads will call upon Governor Dunne, who has kindly consented to give them a hearing. Later, the railroads will try to get all the facts of this passenger fare question before all the people. Railway officials will appear before commercial, industrial, labor and civic organizations and public meetings throughout the state, wherever such meetings can be arranged, to make clear to the public just what the railroads need and why they should have it, and to answer fully and frankly all questions asked.

"In due time a bill will be presented in the legislature for restoration to the railroads of half of what was taken away from them in 1907 by legislative action, or for a maximum rate of 2½ cents per mile. The railroads believe the people will endorse this bill after they have learned all the facts in the case, and the purpose of the railroads is to give the people 'the truth, the whole truth and nothing but the truth.' Already arrangements have been made for meetings beginning next week at Galena, Rockford, Freeport, Joliet, Ottawa, Polo, Mendota, Sterling, Dixon, DeKalb, Belvedere, La Salle, Peru, Peoria, Monmouth, Galva and Galesburg.

Chicago Railway Equipment Company Annual Dinner

At the annual dinner of the Chicago Railway Equipment Company, held at the Union League Club, in Chicago, on Tuesday evening, February 2, the subject for discussion was "The Business Man and the Future, His Duties and Opportunities."

Papers on various phases of the subject were read by E. B. Leigh, president of the Chicago Railway Equipment Company; Samuel O. Dunn, editor of the *Railway Age Gazette*; J. R. Chapman, vice-president of the Continental & Commercial National Bank; C. S. Gleed, chairman of the Missouri & Kansas Telephone Company; A. H. Mulliken, president of the Pettibone & Mulliken Company, and W. A. Smith, editor of the *Railway Review*. The meeting was attended by the officers and directors of the Chicago Railway Equipment Company and by numerous persons connected with other large interests, and after discussion resolutions were adopted setting forth several reasons for the need of concerted action by the business interests of the country regarding legislation and expressing the view that the Chamber of Commerce of the United States seemed to be the only great business organization from which could issue a movement for organizing the business men of the country. A telegram to this effect was therefore sent to the Chamber of Commerce of the United States in session at Washington urgently requesting it to give careful consideration at its meeting to this suggestion and to appoint a committee to devise ways and means for mobilizing the entire business forces of the country to the end that business may speak and act as an intelligent and forceful unit on the many questions which so vitally effect it.

Proposed Railway Legislation

A bill has been introduced in the Alabama legislature to require all locomotives in the state to be equipped with electric headlights.

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The Iowa railroads have announced that they have appointed a committee to petition the legislature to repeal the state two-cent fare law and substitute for it a law allowing a fare of 2½ cents a mile.

* * *

The Minnesota railroads have asked the legislature to amend the state passenger fare law to empower the state railroad and warehouse commission to authorize increases in passenger rates, if, after an investigation, it finds that increased rates would be reasonable.

* * *

A bill has been introduced in the Oklahoma legislature to require each railroad company operating in the state to maintain a hospital for employees within the state. Other bills before the legislature are the full crew bill and the car limit bill. Petitions have been received by the legislature from the commercial clubs of several towns protesting against the enactment of any anti-railroad legislation.

Representative Clark of Florida has introduced in Congress a bill to require the provision of separate cars for negroes by all transportation companies in the district of Columbia. The bill has been reported favorably by the committee on the District of Columbia, but there seems little chance that it will be acted on seriously at the present session of Congress.

* * *

A bill has been introduced in the Arizona legislature for the purpose of encouraging the construction of railroads. The law exempts from taxation for a period of 10 years all the property of any company which shall, during 1915, after having filed notice with the secretary of state of its intention to do so, begin the construction of a line of railroad or street railroad in the state, provided work shall be started within six months after such notice and that not less than 2 miles of track shall be laid during each 30 days.

* * *

A bill has been introduced in the Senate of Virginia which, if adopted, will more than double the taxes now paid by the steam railroads in Virginia. The purpose of the measure is to make uniform assessments and taxation and to abolish the state franchise tax. The franchise tax is repealed outright and all property of the roads, of all kinds and descriptions, is subjected to state, city, county and district taxes. The supporters of the measure allege that the value of the railroad property in Virginia was reduced from \$304,327,509 to \$121,530,081, because the State Corporation Commission, in ascertaining and assessing the value of property, reduced the value by capitalizing the franchise tax on the basis of 35 cents on \$100, and then deducting this sum from the actual valuation. This is claimed to be an injustice to the other taxpayers of Virginia.

Locomotive Spark Arresters

The Railway Commission of Canada proposes to prescribe the use of special spark arresters for locomotives burning non-coking coals, and has issued a circular (No. 141) calling for suggestions. The circular says that during the past two years, numerous complaints have been received as to fire danger resulting from the use as locomotive fuel of certain classes of western coals. It appears from analyses that the coals in question are not lignites, but that in each case where such trouble has occurred the coal has poor coking properties, or is non-coking. It is considered essential that some steps be taken to reduce to normal proportions the fire hazard resulting from the use of such coals, and to meet this situation, the board has under consideration the advisability of amending Regulation 2 of General Order 107 by adding the following:

(c) There shall be such special spark-arresting device, other than the above, as may be approved by the board, on every engine burning coal which has poor coking properties or is non-coking, the use of which, as locomotive fuel, is not prohibited by Regulation 7 of this order.

All parties interested are requested to submit their comments to the board, in writing, not later than February 20.

Railway Business Association

The general executive committee of the Railway Business Association for 1915 is announced as follows, being made up of the elected president, treasurer and vice-presidents and the appointed executive members:

President, George A. Post; treasurer, M. S. Clayton; vice-presidents, S. P. Bush, Alba B. Johnson, H. G. Prout, W. G. Pearce, W. H. Cottingham, W. B. Leach, E. B. Leigh; executive members, J. C. Bradley, W. E. Clow, J. S. Coffin, O. H. Cutler, Henry Elliot, Irving T. Hartz, F. T. Heffelfinger, H. H. Hewitt, J. M. Hopkins, A. M. Kittredge, Robert P. Lamont, F. J. Lanan, W. H. Marshall, Stephen C. Mason, A. H. Mulliken, Rudolph Ortmann, S. F. Pryor, W. W. Salmon, Justus H. Schwacke, G. W. Simmons, Geo. T. Smith, James S. Stevenson, H. H. Westinghouse, W. W. Willits.

National Association of Scale Experts

The eleventh semi-annual meeting of the National Association of Scale Experts was held in the Fort Dearborn hotel, Chicago, February 1, 2 and 3. Five business sessions were held, at which papers were presented on various phases relating to design, installation and maintenance of scales. Among the pa-

pers of interest to railway men were the following: "Installation, Maintenance and Care of Track Scales," by A. Malmstrom, chief scale inspector, Santa Fe System; "Test of Railroad Track Scales," by D. J. McGrath, scale expert of the state of Minnesota; "Weighing and Recording of Weights," by L. M. Allen, district superintendent, Western Weighing & Inspection Bureau, Omaha, Neb., and "Recording Weights," by F. C. Maegly, assistant general freight agent, Santa Fe System, Chicago.

MEETINGS AND CONVENTIONS

The following list gives names of secretaries, dates of next or regular meetings, and places of meeting.

- AIR BRAKE ASSOCIATION.**—F. M. Nellis, 53 State St., Boston, Mass. Next convention, May 4-7, 1915, Hotel Sherman, Chicago.
- AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.**—A. G. Thomason, Demurrage Commissioner, 845 Old South Bldg., Boston, Mass. Annual convention, April, 1915, Richmond, Va.
- AMERICAN ASSOCIATION OF DINING CAR SUPERINTENDENTS.**—H. C. Boardman, D., L. & W., Hoboken, N. J. Next meeting, October, 1915.
- AMERICAN ASSOCIATION OF FREIGHT AGENTS.**—R. O. Wells, Illinois Central, East St. Louis, Ill. Annual meeting, May 21-24, 1915, Richmond, Va.
- AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.**—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York. Next meeting, March 2-3, San Francisco, Cal.
- AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.**—E. H. Harman, Room 101, Union Station, St. Louis, Mo. Next meeting, August 19-20, 1915, San Francisco, Cal.
- AMERICAN ELECTRIC RAILWAY ASSOCIATION.**—E. B. Burrill, 20 W. 39th St., New York. Annual convention, October, 1915, San Francisco, Cal.
- AMERICAN ELECTRIC RAILWAY MANUFACTURERS' ASSOCIATION.**—H. C. McConaughy, 165 Broadway, New York. Meetings with American Electric Railway Association.
- AMERICAN RAILROAD MASTER TINNERS, COPPERSMITHS AND PIPEFITTERS' ASSOCIATION.**—W. E. Jones, C. & N. W., 3814 Fulton St., Chicago. Annual meeting, Chicago.
- AMERICAN RAILWAY ASSOCIATION.**—W. F. Allen, 75 Church St., New York. Next session, May 19, 1915, Atlantic City, N. J.
- AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.**—C. A. Lichty, C. & N. W., Chicago. Next convention, October 19-21, 1915, Detroit, Mich.
- AMERICAN RAILWAY ENGINEERING ASSOCIATION.**—E. H. Fritch, 900 S. Michigan Ave., Chicago. Next convention, March 16-18, 1915, Chicago.
- AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.**—J. W. Taylor, 1112 Karpen Bldg., Chicago. Annual meeting, June 9-11, 1915, Atlantic City, N. J.
- AMERICAN RAILWAY SAFETY ASSOCIATION.**—L. F. Shedd, C. R. I. & P., Chicago.
- AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.**—Owen D. Kinsey, Illinois Central, Chicago. Annual meeting, July, 1915.
- AMERICAN SOCIETY FOR TESTING MATERIALS.**—Prof. E. Marburg, University of Pennsylvania, Philadelphia, Pa.
- AMERICAN SOCIETY OF CIVIL ENGINEERS.**—Chas. W. Hunt, 220 W. 57th St., New York. Regular meetings, 1st and 3d Wednesday in month, except June, July and August, 220 W. 57th St., New York.
- AMERICAN SOCIETY OF ENGINEERING CONTRACTORS.**—J. R. Wemlinger, 11 Broadway, New York. Regular meetings, 2d Thursday in month, at 2 P. M., 11 Broadway, New York.
- AMERICAN SOCIETY OF MECHANICAL ENGINEERS.**—Calvin W. Rice, 29 W. 39th St., New York.
- AMERICAN WOOD PRESERVERS' ASSOCIATION.**—F. J. Angier, Supt. Timber Preservation, B. & O., Mt. Royal Sta., Baltimore, Md. Next convention, January 18-20, 1916, Chicago.
- ASSOCIATION OF AMERICAN RAILWAY ACCOUNTING OFFICERS.**—E. R. Woodson, 1300 Pennsylvania Ave., N. W., Washington, D. C. Annual convention, April 28, 1915, Piedmont Hotel, Atlanta, Ga.
- ASSOCIATION OF MANUFACTURERS OF CHILLED CAR WHEELS.**—George W. Lyndon, 1214 McCormick Bldg., Chicago.
- ASSOCIATION OF RAILWAY CLAIM AGENTS.**—C. W. Egan, B. & O., Baltimore, Md. Annual meeting, May 19, 1915, Galveston, Tex.
- ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.**—Jos. A. Andreucetti, C. & N. W., Room 411, C. & N. W. Sta., Chicago. Annual meeting, October, 1915.
- ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.**—P. W. Drew, Soo Line, 112 West Adams St., Chicago. Annual meeting, June 22-25, 1915, Rochester, N. Y.
- ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.**—G. P. Conard, 75 Church St., New York. Next meeting, June 23-25, Niagara Falls, N. Y.
- BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.**—L. D. Mitchell, Detroit Graphite Co., Chicago, Ill. Meetings with American Railway Bridge and Building Association.
- CANADIAN RAILWAY CLUB.**—James Powell, Grand Trunk, P. O. Box 7, St. Lambert (near Montreal), Que. Regular meetings, 2d Tuesday in month, except June, July and August, Windsor Hotel, Montreal, Que.
- CANADIAN SOCIETY OF CIVIL ENGINEERS.**—Clement H. McLeod, 176 Mansfield St., Montreal, Que. Regular meetings, 1st Thursday in October, November, December, February, March and April. Annual meeting, January, Montreal.
- CAR FOREMEN'S ASSOCIATION OF CHICAGO.**—Aaron Kline, 841 Lawler Ave., Chicago. Regular meetings, 2d Monday in month, except July and August, Lytton Bldg., Chicago.
- CENTRAL RAILWAY CLUB.**—H. D. Vought, 95 Liberty St., New York. Regular meetings, 2d Friday in January, May, September and November. Annual meeting, 2d Thursday in March, Hotel Statler, Buffalo, N. Y.
- ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA.**—Elmer K. Hiles, 2511 Oliver Bldg., Pittsburgh, Pa. Regular meetings, 1st and 3d Tuesday, Pittsburgh.
- FREIGHT CLAIM ASSOCIATION.**—Warren P. Taylor, R. F. & P., Richmond, Va. Annual meeting, June 16, 1915, Chicago.
- GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.**—A. M. Hunter, 321 Grand Central Station, Chicago. Regular meetings, Wednesday, preceding 3d Thursday in month, Room 1856, Transportation Bldg., Chicago.
- INTERNATIONAL RAILWAY FUEL ASSOCIATION.**—C. G. Hall, C. & E. I., 922 McCormick Bldg., Chicago. Annual meeting, May 17-20, 1915, Hotel La Salle, Chicago.
- INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.**—Wm. Hall, 829 W. Broadway, Winona, Minn. Next convention, July 14-17, 1915, Shetman House, Chicago.
- INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.**—A. L. Woodworth, C. H. & D., Lima, Ohio. Annual meeting, August 17, 1915, Philadelphia, Pa.
- MAINTENANCE OF WAY AND MASTER PAINTERS' ASSOCIATION OF THE UNITED STATES AND CANADA.**—T. I. Goodwin, C. R. I. & P., Eldon, Mo. Next meeting, October 19-21, 1915, St. Louis, Mo.
- MASTER BOILER MAKERS' ASSOCIATION.**—Harry D. Vought, 95 Liberty St., New York. Annual convention, May 26 to 28, 1915, Chicago, Ill.
- MASTER CAR AND LOCOMOTIVE PAINTERS' ASSOCIATION OF THE UNITED STATES AND CANADA.**—A. P. Dane, B. & M., Reading, Mass. Next convention, September 14-17, 1915, Detroit, Mich.
- MASTER CAR BUILDERS' ASSOCIATION.**—J. W. Taylor, 1112 Karpen Bldg., Chicago. Annual meeting, June 14-16, 1915, Atlantic City, N. J.
- NATIONAL RAILWAY APPLIANCES ASSOCIATION.**—Bruce V. Crandall, 537 So. Dearborn St., Chicago. Next convention, March 15-19, 1915, Chicago.
- NEW ENGLAND RAILROAD CLUB.**—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, 2d Tuesday in month, except June, July, August and September, Boston.
- NEW YORK RAILROAD CLUB.**—Harry D. Vought, 95 Liberty St., New York. Regular meetings, 3d Friday in month, except June, July and August, 29 W. 39th St., New York.
- NIAGARA FRONTIER CAR MEN'S ASSOCIATION.**—E. Frankenberger, 623 Brisbane Bldg., Buffalo, N. Y. Meetings monthly.
- PEORIA ASSOCIATION OF RAILROAD OFFICERS.**—M. W. Rotchford, Union Station, Peoria, Ill. Regular meetings, 2d Thursday in month, Jefferson Hotel, Peoria.
- RAILROAD CLUB OF KANSAS CITY.**—C. Manlove, 1008 Walnut St., Kansas City, Mo. Regular meetings, 3d Friday in month, Kansas City.
- RAILROAD MASTER TINNERS, COPPERSMITHS AND PIPEFITTERS' ASSOCIATION.**—U. G. Thompson, C. & E. I., Danville, Ill. Annual meeting, May, 1915.
- RAILWAY BUSINESS ASSOCIATION.**—Frank W. Noxon, 30 Church St., New York.
- RAILWAY CLUB OF PITTSBURGH.**—J. B. Anderson, Room 207, P. R. R. Sta., Pittsburgh, Pa. Regular meetings, 4th Friday in month, except June, July and August, Monongahela House, Pittsburgh.
- RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.**—J. Scribner, 1021 Monadnock Block, Chicago. Meetings with Association of Railway Electrical Engineers.
- RAILWAY FIRE PROTECTION ASSOCIATION.**—C. B. Edwards, Fire Ins. Agt., Mobile & Ohio, Mobile, Ala. Next meeting, October 5-7, 1915, Chicago.
- RAILWAY SIGNAL ASSOCIATION.**—C. C. Rosenberg, Times Bldg., Bethlehem, Pa. Next meeting, March 15, 1915, Chicago. Annual meeting, September 21-24, 1915, Salt Lake City, Utah.
- RAILWAY STOREKEEPERS' ASSOCIATION.**—J. P. Murphy, L. S. & M. S., Box C, Collinwood, Ohio. Annual meeting, May 17-19, 1915, Hotel Sherman, Chicago.
- RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.**—J. D. Conway, 2136 Oliver Bldg., Pittsburgh, Pa. Meetings with Master Car Builders and Master Mechanics' Associations.
- RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.**—G. A. Nelson, 50 Church St., New York. Meetings with Association of Railway Telegraph Superintendents.
- RICHMOND RAILROAD CLUB.**—F. O. Robinson, C. & O., Richmond, Va. Regular meetings, 2d Monday in month, except June, July and August.
- ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.**—L. C. Ryan, C. & N. W., Sterling, Ill. Annual meeting, September 14-16, 1915, Chicago.
- ST. LOUIS RAILWAY CLUB.**—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2d Friday in month, except June, July and August, St. Louis.
- SALT LAKE TRANSPORTATION CLUB.**—R. E. Rowland, Hotel Utah Bldg., Salt Lake City, Utah. Regular meetings, 1st Saturday of each month, Salt Lake City.
- SIGNAL APPLIANCE ASSOCIATION.**—F. W. Edmunds, 3868 Park Ave., New York. Meeting with annual convention Railway Signal Association.
- SOCIETY OF RAILWAY FINANCIAL OFFICERS.**—Carl Nyquist, C. R. I. & P., La Salle St. Sta., Chicago. Annual meeting, September, 1915.
- SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.**—E. W. Sandwich, A. & W. P. R. R., Atlanta, Ga. Next regular meeting, January 21, 1915, Atlanta, Ga.
- SOUTHERN & SOUTHWESTERN RAILWAY CLUB.**—A. J. Merrill, Grant Bldg., Atlanta, Ga. Regular meetings, 3d Thursday, January, March, May, July, September, November, 10 A. M., Candler Bldg., Atlanta.
- TOLEDO TRANSPORTATION CLUB.**—Harry S. Fox, Toledo, Ohio. Regular meetings, 1st Saturday in month, Boody House, Toledo.
- TRACK SUPPLY ASSOCIATION.**—W. C. Kidd, Ramapo Iron Works, Hillburn, N. Y. Meetings with Roadmasters' and Maintenance of Way Association.
- TRAFFIC CLUB OF CHICAGO.**—W. H. Wharton, La Salle Hotel, Chicago.
- TRAFFIC CLUB OF NEWARK.**—John J. Kautzmann, P. O. Box 238, Newark, N. J. Regular meetings, 1st Monday in month, except July and August, The Washington, Newark.
- TRAFFIC CLUB OF NEW YORK.**—C. A. Swope, 291 Broadway, New York. Regular meetings last Tuesday in month, except June, July and August, Waldorf-Astoria, New York.
- TRAFFIC CLUB OF PITTSBURGH.**—D. L. Wells, Erie R. R., Pittsburgh, Pa. Meetings bimonthly, Pittsburgh. Annual meeting, 2d Monday in June.
- TRAFFIC CLUB OF ST. LOUIS.**—A. F. Versen, Mercantile Library Bldg., St. Louis, Mo. Annual meeting in November. Noonday meetings October to May.
- TRAIN DESPATCHERS' ASSOCIATION OF AMERICA.**—J. F. Mackie, 7122 Stewart Ave., Chicago. Annual meeting June 15, 1915, Minneapolis, Minn.
- TRANSPORTATION CLUB OF DETROIT.**—W. R. Hurley, Superintendent's office, L. S. & M. S., Detroit, Mich. Meetings monthly, Normandie Hotel, Detroit.
- TRAVELING ENGINEERS' ASSOCIATION.**—W. O. Thompson, N. Y. C. & H. R., East Buffalo, N. Y. Annual meeting, September, 1915, Chicago.
- WESTERN CANADA RAILWAY CLUB.**—W. H. Rosevear, P. O. Box 1707, Winnipeg, Man. Regular meetings, 2d Monday, except June, July and August, Winnipeg.
- WESTERN RAILWAY CLUB.**—J. W. Taylor, 1112 Karpen Bldg., Chicago. Regular meetings, 3d Tuesday in month, except June, July and August, Karpen Bldg., Chicago.
- WESTERN SOCIETY OF ENGINEERS.**—J. H. Warder, 1735 Monadnock Block, Chicago. Regular meetings, 1st Monday in month, except January, July and August, Chicago. Extra meetings, except in July and August, generally on other Monday evenings.

Traffic News

The formal opening of the Panama Canal has been postponed from March to July.

The Chicago Transportation Association will hold its eighth annual dinner on Thursday, February 11, at the Hotel Sherman, Chicago. Luther M. Walter will be the principal speaker.

Examiner Brown of the Interstate Commerce Commission began a hearing in Chicago on Tuesday, on the discontinuance of the absorption of tunnel and lighterage charges by the trunk line railroads.

An embargo on transportation of livestock was again imposed at Chicago last week, a case of foot-and-mouth disease having been discovered. It was expected that the interruption to business would be of short duration.

The Louisville & Nashville Railroad has withdrawn its request lately presented to the Alabama Railroad Commission to allow an increase in the passenger rate from 2½ cents to 3 cents a mile, on all branch lines. Action has been postponed by the commission indefinitely.

The New York Central reports having taken a whole train load of Argentine Republic exhibits from New York destined to the Panama Pacific Exposition, San Francisco. This is one of the largest exhibits from any foreign country. The Central reports also that the inquiries for information as to fares, routes, etc., are now of record breaking proportions. The passenger department estimates that if a tenth of the people who make such inquiries go to the Exposition the travel will far eclipse anything that was expected two months ago.

J. B. Ford, assistant general freight agent of the Cincinnati, New Orleans & Texas Pacific, has issued a circular to local agents and to interested shippers telling in detail of a large number of opportunities for foreign trade, the information being set forth after the fashion which is followed in the circulars of the Department of Commerce at Washington. Mr. Ford's circular dated January 26 fills five pages, and gives names and addresses, with details, more fully than does the government. A whole page is taken up with descriptions, including dimensions, etc., of cotton mill machinery wanted by Ramon Sosa, of Asuncion, Paraguay.

The railroads in the Western Passenger Association, operating through the territory west of Chicago and St. Louis to the Rocky mountains, have filed tariffs with the Interstate Commerce Commission to become effective on March 1, increasing their interstate passenger fares from a basis of approximately 2 cents to a basis of approximately 2½ cents a mile. These tariffs are similar to those filed by the eastern railroads, which became effective in December without suspension by the Interstate Commerce Commission. The following table shows the increases from Chicago to various important cities:

	Present rate	Proposed rate
St. Paul	\$8.05	\$10.00
Omaha	10.15	12.25
Kansas City	10.15	12.50
Duluth	9.29	11.43
Sioux City	10.30	12.75
Des Moines	7.17	9.00

Meanwhile the western roads, as well as those in Ohio, Indiana and Michigan, are preparing to push actively their campaigns to secure a repeal of the 2-cent fare laws and the substitution of laws allowing 2½ cents a mile in the several states.

Like Old Times

The Baltimore & Ohio and other railroads in trunk line territory have been authorized by the Interstate Commerce Commission to establish immigrant rates from New York, Philadelphia, Baltimore, Boston, Providence and New Bedford, to points in Canada west of and including Winnipeg, on the Grand Trunk Pacific, lower than the fares to intermediate points in Minnesota and South Dakota. Authorization was given also to roads in the same territory to make rates of the same kind to points in British Columbia on the Great Northern lower than to intermediate points in the United States.

Commission and Court News

INTERSTATE COMMERCE COMMISSION

New York Dock Railway Refused Joint Rates

New York Dock Railway v. Baltimore & Ohio et al. Opinion by Commissioner Clark:

The commission finds that the trunk lines need not establish through routes and joint rates with the New York Dock Railway on traffic between complainant's stations on the Brooklyn (N. Y.) water front and points on defendants' lines in and west of trunk-line territory. The New York Dock Railway at the present time receives for its services to defendants 4½ cents per 100 lb. on all freight, except grain in bulk for track delivery, originating at or destined to points west of the western termini of the trunk lines; three cents per 100 lb. on all freight originating at or destined to points on and east of the western termini, and three cents per 100 lb. on all grain in bulk for track delivery.

The railway has trackage at the Fulton, Baltic and Atlantic terminals of the New York Dock Company. It has been operated separately as a railway since October 1, 1912. Its capitalization is \$500,000, \$450,000 preferred stock, and \$50,000 common stock, but the only stock that has been issued is \$3,000 preferred stock, all of which is owned by the dock company. Only the common stock, none of which has been issued, has voting power. Most of the directors of the railway are officers of the dock company, and the principal officers of the two organizations are the same.

The property of the New York Dock Railway is adjacent to the Jay Street Terminal, the Brooklyn Eastern District Terminal and to freight stations of the Lackawanna and the Pennsylvania railroads, and there seems to be no public demand for the joint rates requested. The commission feels that where the general public involved is adequately served, where there is no apparent necessity or demand on the part of shippers for the establishment of joint rates, and where there are no absolutely unreasonable rates, practices or discriminations, the commission cannot view with favor an effort to require the establishment of such routes and rates merely to enable a carrier to wrest from its connections or an agent to wrest from its principal greater compensation. (32 I. C. C., 558.)

Hearing on Spotting Charges

A hearing at Chicago before Examiner Pattison on the tariffs filed by the eastern railways imposing charges for spotting cars was concluded in Chicago last week, and it was announced that further hearings had been arranged to be held at Cincinnati on Monday, at Cleveland on Saturday of this week, at Pittsburgh on February 11, at Boston on February 19, and at New York on February 25. The Chicago hearing was confined to tariffs applying to industrial plants in Indiana, Michigan and Illinois. It was announced by the carriers that they would not at the Chicago hearing introduce any testimony as to the fairness or reasonableness of the charge, but that such testimony would be offered later. Eugene Morris, chairman of the Central Freight Association, in addition to his testimony as reported last week, told of a meeting of the Central Freight Association at which the Interstate Commerce Commission's decision in the industrial railway case was discussed, and said that as a result of that opinion the spotting tariffs had been filed. Mr. Morris explained that, as provided in the tariffs, the charge for spotting would apply in the following typical cases:

"1. Upon tracks of industries where plant service has been performed by the industrial or plant facility having its own power and an allowance has heretofore been made therefor but canceled, and the connecting or road-haul carrier may hereafter be called upon to perform such plant service, and it is practicable to do so.

"2. Upon tracks of industries upon which the engines of the road-haul or connecting carrier and power of the plant have heretofore performed the service and divided the cost as between the plant and the carriers.

"3. Upon plant tracks in cases where two or more carriers

reach the industry, and for operating reasons each carrier contributes a certain number of engines and prorates the actual cost.

"4. Industrial plant tracks upon which the engines of the road-haul or connecting carrier have performed the service at their expense, or when one carrier has performed the service and divided the expense among two or more carriers reaching the tracks of the plant."

The other witnesses were operating officers who described in detail the physical conditions at the various plants. They were cross-examined by John S. Burchmore, attorney for the National Industrial Traffic League, and by other attorneys representing the shippers.

STATE COMMISSIONS

The Massachusetts Public Service Commission has again suspended, until March 1, or until further orders, the proposed advances in passenger fares filed with the commission by the principal railroads of the state several weeks ago.

The Railroad Commission of Louisiana has issued an order, No. 1,856, forbidding the railroads to charge "car rental" on cars containing freight "transported from one point to another within prescribed switching limits at published switching rates, or elsewhere in the state of Louisiana." Apparently the car rental charge is something that has been collected by railroads in addition to the usual demurrage charge.

The Public Service Commission of Pennsylvania on complaint of residents of East Berlin holds that the East Berlin Railroad Company must before February 1 resume the running of freight and passenger trains; and this notwithstanding the fact that the company has become virtually bankrupt because of the small volume of traffic. It is held that the charter of the road is a contract between the state and the company, and until the charter has been surrendered or the state has declared it forfeited the contract must be carried out. The line of the road is seven miles long from East Berlin to a connection with the Western Maryland.

The New York Public Service Commission, Second district, has suspended new regulations, proposed by the principal railroads, by which they would make shippers of bulk freight pay for the bulkheads or temporary doors needed in shipping bulk commodities, such as fruit, vegetables, and salt. It has hitherto been the custom of the railroads to supply these doors, or, where the shippers supplied them, to make an allowance of fifty cents each, not exceeding two dollars a car. The commission will shortly set a date for a hearing. The railroads had furnished this service to shippers under an order of the commission made in 1909 on the complaint of the New York State Shippers' Association, which order expired this month.

COURT NEWS

The Supreme Court of the United States has declared void, as an interference with interstate commerce, an order of the Louisiana Railroad Commission, requiring the railroads of that state to establish switching tariffs, to apply on both interstate and intrastate freight.

The Supreme Court of Appeals of West Virginia has held a consignor responsible for charges on freight refused by the consignee. It was in the suit of the Baltimore & Ohio against the Luella Coal & Coke Company. The court says that in the absence of a special contract, a shipper of coal in carload lots to a consignee who declines to receive it is liable to the carrier for the freight charges and also for demurrage accruing after he had notice of the consignee's refusal.

The Supreme Court has this week held that local commerce between the mainland of a state and an island belonging to it is subject to state regulation. The decision was announced in a suit brought by the Wilmington Transportation Company to enjoin the California Railroad Commission from regulating rates between San Pedro, on the mainland, and Avalon, on Santa Catalina Islands, 27 miles away. The transportation company claimed the commerce was carried on the high seas and thus was subject only to federal regulation.

The Supreme Court of the United States has declined to review the decision of the Fifth Circuit Court of Appeals in a test case involving claims for damages against the Louisville & Nashville on alleged forged bills of lading issued to Knight,

Yancey & Company, Alabama cotton brokers, who failed. The lower court held the railroad not liable. The claims against carriers which were presented for losses in connection with fraudulent bills of lading, issued by connivance or negligence on the part of the station agents, at or about the time of the Knight-Yancey failure, amounted to more than \$2,500,000.

The supreme court of Arkansas has rendered a decision under the full crew law of that state, deciding in favor of the state in a case which had been appealed by the St. Louis & San Francisco, which had been fined for violation of the law. The railroad appealed on the ground that the act, which applies to railroads operating lines more than 50 miles long, does not apply to it because it does not have 50 miles of continuous mileage in Arkansas. The court held that the act applies to all railroads of more than 50 miles that enter Arkansas, no matter what portion of the tracks may lie in the state. Attorneys for the railroad announced that the decision would be appealed to the United States Supreme Court.

The New York State Court of Appeals, in the case of the Public Service Commission against W. H. Mendel, proprietor of the parcel checking room at the Grand Central terminal in New York City, has decided against the commission. This proceeding was begun some time ago on a complaint charging that the fees collected (ten cents) were exorbitant. Mr. Mendel before the commission, refused to give certain testimony, whereupon the commission carried the case to the courts. The courts decline to compel Mr. Mendel to testify as to the financial condition of his business; they hold that it is a private business and that the accident of location does not put him under the jurisdiction of the commission. The Mendel family has had this "concession" at the Grand Central for more than 40 years.

Fencing Statute Applies to Live Stock Only

The Supreme Court of Montana holds that the statute, Rev. Codes, §4,308, requiring railroads to fence their tracks and maintain cattle guards, and making them liable for killing stock on their roads in case they do not maintain fences and guards, protects live stock only. Failure to maintain a fence does not render a road liable for the death of a child who had entered on the unfenced tracks and was run over. (*Nixon v. Montana, W. & S., 145, Par. 8.*)

Federal Employers' Liability Act

In an action under the Federal Employers' Liability Act for the death of a switchman, it appeared that the deceased was employed by the defendant in its yards at Oelwein, Iowa, making up a train destined for Minnesota, some of the cars to be set out at stations in Iowa, and some carrying local freight to be unloaded on the way. Some of the cars, destined for points in Iowa, originated in Iowa, and some came from points in Illinois. These cars, some intrastate and some interstate, were being made into the Minnesota train. The deceased was run over by an intrastate car and the negligence found was in respect of the brake-step of an intrastate car. It was held that the defendant was at the time engaged as a common carrier in interstate commerce and that the deceased was employed by it in such commerce, and that the Federal Employers' Liability Act applied. (*Crandall v. C. G. W., Minnesota Supreme Court, 150, N. W., 165.*)

Construction of Statute Fixing Passenger Fares

By Minnesota laws 1913, C. 536 (Gen. St., 1913, §§4,286, 4,287), no railroad company shall charge for transporting any passenger any sum in excess of the following prices, viz.: For a distance not exceeding five miles, three cents a mile; for all other distances, two cents a mile. Construing this act, the Minnesota Supreme Court holds that the language of the act is ambiguous. It is uncertain whether the legislature intended to authorize a railroad company, when the distance exceeds five miles, to charge three cents a mile for the first five miles, and two cents a mile for the additional distance, or only to charge the lower rate for the entire distance. The act is therefore open to construction.

Considering the probable object of the legislature in granting the three cent rate, and the absurd result of the last-named construction, which would allow the carrier to charge 15 cents for five miles, and only 12 cents for six miles, and 14 cents

for seven miles, and that this would be in direct violation of the state statutes prohibiting unequal or unreasonable transportation charges, the act is construed to mean three cents a mile for the first five miles and two cents a mile for the additional distance. (*State v. Chicago, M. & S. P.*, 150 N. W., 172.)

Eminent Domain—Extent of Interest Acquired

The Supreme Court of North Carolina holds that in condemning a right of way, under ordinary proceedings, a railway acquires an easement in the property, to be held and used as the necessities and well-ordered management of the road may require; and the officers of the company are made the judges of the extent and necessities of this use.

To the extent that the land covered by the right of way is not presently required for the purpose of the road, the owner may continue to occupy and use it in a manner not inconsistent with the full and proper enjoyment of the easement. It is very generally held that, while a railroad company may not use or license the use of its right of way or station grounds for purposes strictly individual or private, it may erect thereon any and all buildings reasonably required for the convenience of the company as a corporation and a promotion and furtherance of its corporate business, and what it may do for itself and for like purposes it may permit or license to its patrons to the extent that it does not hinder or interfere with the proper performance of its duties to the public. It was held that a railroad company could lease a part of the land condemned for its station grounds to a party who erected thereon a warehouse used for receiving and shipping freight in his wholesale business and who covenanted to make the railroad company his preferred line for the transportation of merchandise to and from such warehouse. *Coit v. Owenby*, Wofford Co., North Carolina Supreme Court, 81 S. E., 1,067.

Construction and Maintenance of Private Side Tracks; Powers of Legislature and Railroad Commission

The Michigan Railroad Commission, in a recent decision, held that railroad companies agreeing to construct and maintain private side tracks should not insert in their contracts requirements providing (a) that the railroad company shall have priority of right to the use of the side track when constructed upon the shipper's premises and at his expense, or when, after construction by the railroad company, it has been paid for by such shipper; (b) that during the time such side track remains the property of the shipper the railroad company may extend the track through the shipper's premises without his permission; (c) that the railroad company may, at its option, if the shipper fails to comply with the contract, discontinue the service and remove the track; (d) that the shipper on whose premises and at whose sole expense the side track was constructed must route his freight over the operating line; (e) that the shipper must assume risk of fire and release the railroad from all liability for loss or injury by fire; (f) that the shipper maintain a clearance as to said side tracks to exceed 22 ft. overhead and 6 ft. from the rail on either side thereof. The Supreme Court of the state holds that this decision is invalid, because, though the duty to maintain and operate side tracks is absolute, no universal rule governing the conditions under which the duty shall be performed can be made. The reasonableness of an order requiring performance of the duty depends upon the peculiar circumstances of each case; the decision is a practical denial of a hearing in each case where one is desired, and a prejudgment of the rights of railroad companies.

What the commission did, the court said, was, not to administer, but enact, a law. The legislature alone can impose upon railroads the duty to construct private side tracks. When the complaint was made, it had imposed no such duty. Having the right to construct or refuse to construct or maintain a particular track, the complainant had the right to impose the terms upon which it would construct and maintain it. After the complaint was made, and before the decision of the commission was handed down, the legislature imposed upon railroads the duty to build spur tracks to and upon the grounds of shippers on certain terms and subject to certain contingencies. (*Michigan Public Acts, 1909, Act No. 300, §6, subd. "b."*) Even if that legislation should be held invalid, it was nevertheless an expression of legislative opinion that the commission had no such powers as it had assumed in the matter. (*Grand Rapids & Indiana v. Railroad Commission*, 150 N. W., 154.)

Railway Officers

Executive, Financial, Legal and Accounting

W. A. Webb, general manager of the Missouri, Kansas & Texas, has been appointed vice-president, with headquarters at Dallas, Tex.

Colonel J. J. Slocum has been elected president of the Tennessee, Alabama & Georgia, and E. C. Osborn has been elected treasurer, both with headquarters at New York.

B. B. Young, chief clerk to the first vice-president of the Pennsylvania Company and the Pittsburgh, Cincinnati, Chicago & St. Louis at Pittsburgh, Pa., has been promoted to assistant secretary.

L. J. Brinkman has been appointed freight claim agent of the Michigan Central, the Chicago, Kalamazoo & Saginaw, the Detroit & Charlevoix, and the Detroit Terminal, with office at Detroit, Mich., to succeed J. M. Eedson, resigned.

D. D. Curran, president and general manager of the New Orleans & Northeastern, the Alabama & Vicksburg and the Vicksburg, Shreveport & Pacific, with office at New Orleans, La., has been elected chairman of the board of directors. Larz A. Jones, vice-president and controller at New Orleans, has been elected president and general manager, succeeding Mr. Curran, and T. F. Steele, freight traffic manager at New Orleans, has been elected vice-president and traffic manager.

G. S. Waid, whose appointment as general manager of the Sunset-Central Lines, with headquarters at Houston, Tex., has already been announced in these columns, was elected vice-president and general manager of the Galveston, Harrisburg & San Antonio, effective December 1, 1914; also of the Houston & Texas Central, the Houston East & West Texas, and the Texas & New Orleans, effective January 12, 1915, and of the Houston & Shreveport, effective January 13. Prior to December 1, 1914, Mr. Waid was assistant general manager of the companies named and on that date was appointed general manager succeeding W. G. Van Vleck, deceased, who was vice-president and general manager, the vice-presidency in each case remaining vacant from the date of Mr. Van Vleck's death on November 10, 1914, until the election by the several boards of directors of Mr. Waid as his successor, as above noted.

Albert H. Harris, general counsel of the New York Central, announces the appointment of the following seven officers in the legal department with assigned territories as indicated, with slight exceptions: Alexander S. Lyman, general attorney, New York (states of New York, Pennsylvania and New Jersey); Frank J. Jerome, general counsel, Cleveland (Ohio and portions of New York and Pennsylvania); Robert J. Cary and Bertrand Walker, general counsel, Chicago (Illinois, Indiana and Michigan); Samuel H. West, general attorney, Cleveland (Ohio and portions of New York and Pennsylvania); Charles C. Paulding, solicitor, New York (in charge of legislative matters in New York and New Jersey); Frank V. Whiting, general claims attorney, New York, in charge of claims for injury to persons and for loss and damage to property, except such as are subject to the jurisdiction of the traffic or accounting departments.

Operating

W. E. Williams, general superintendent of the Missouri, Kansas & Texas, has been appointed general manager, with headquarters at Parsons, Kan.

A. E. Pistole, trainmaster of the Texas & Pacific at Marshall, Tex., has been appointed superintendent of terminals at Fort Worth, Tex., succeeding A. W. Montague, deceased.

H. McCall, division superintendent of the Grand Trunk Pacific at Edson, Alberta, has been transferred to Melville, Sask., in a similar capacity, succeeding G. S. Cooke, resigned. A. Kilpatrick succeeds Mr. McCall.

W. R. Dawson, assistant superintendent of the Pocahontas division of the Norfolk & Western, at Bluefield, W. Va., has been appointed assistant to the general manager, with office at Roanoke,

Va., succeeding G. W. Merrell, deceased. L. C. Ayers, assistant superintendent of the Scioto division, at Portsmouth, Ohio, succeeds Mr. Dawson, and H. T. Reinicker, roadmaster at Shenandoah, Va., succeeds Mr. Ayers.

C. O. Jenks, superintendent of the Lake district of the Great Northern, with office at Superior, Wis., has been appointed general manager of the Spokane, Portland & Seattle, with headquarters at Portland, Ore., succeeding W. D. Scott, deceased.

Amos G. Manahan, special agent of the operating department of the New York, Philadelphia & Norfolk, at Cape Charles, Va., was retired on January 1, under the pension rules of the company, after a service of 57 years and 9 months on the Pennsylvania system.

C. E. Crosby, transportation superintendent of the Carolina & North Western at Chester, S. C., has been appointed superintendent in charge of transportation, maintenance of roadway and equipment, with headquarters at Chester, and his former position has been abolished.

R. C. Andrews, superintendent of the Eastern division of the Texas & Pacific, with headquarters at Marshall, Tex., has been appointed assistant general superintendent, with office at Dallas, Tex. William Lynch, superintendent of the New Orleans division, at New Orleans, La., succeeds Mr. Andrews, and J. H. Elliott succeeds Mr. Lynch. H. F. Bickell has been appointed inspector of transportation, with headquarters at Dallas, Tex.

A. M. Marion, chief clerk to the general superintendent of freight transportation of the Pennsylvania Company and the Pittsburgh, Cincinnati, Chicago & St. Louis at Pittsburgh, Pa., has been promoted to the newly created position of assistant to the general superintendent of freight transportation, and S. M. Rankin, chief clerk to the general superintendent of passenger transportation at Pittsburgh, has been promoted to the newly created position of assistant to the general superintendent of passenger transportation.

Lewis Warrington Baldwin, whose appointment as general superintendent of the Illinois Central and Yazoo & Mississippi lines south of the Ohio river, with headquarters at New Orleans, La., has already been announced in these columns, was born on February 26, 1875, at Waterbury, Md. He was graduated from Lehigh University in 1896, and began railway work in July of that year with the Illinois Central, with which road he has remained ever since. He was consecutively chainman, rodman and assistant engineer until June, 1898; the following three months assistant engineer on maintenance work, and from September, 1898, to January, 1900, assistant engineer on location and construction. He was then for one year supervisor of track; from February, 1901, to September, 1904, roadmaster, and from the latter date to April, 1906, trainmaster. The succeeding four years Mr. Baldwin was superintendent, being appointed engineer maintenance of way at Chicago in May, 1910. In April, 1913, he became superintendent of the Kentucky division, which position he held at the time of his recent promotion to general superintendent of the lines south of the Ohio river, as above noted.



L. W. Baldwin

Traffic

The office of H. E. Arnold, commercial agent of the New York Central, at Lowell, Mass., has been removed to Boston.

E. S. White has been appointed general freight and passenger agent of the Illinois Southern, with office at St. Louis, Mo., succeeding W. H. Ogborn, resigned.

M. B. Wilburn, traveling freight agent of the Gulf, Colorado & Santa Fe at Houston, Tex., has been appointed commercial agent at that place, succeeding Drew Head, promoted.

Ted W. Krein, assistant general freight and passenger agent of the Fort Dodge, Des Moines & Southern, has been appointed traffic manager of the Muscatine North & South Railway, at Muscatine, Iowa, in place of H. B. Holbert, resigned.

K. B. Hannigan, commercial agent of the Southern Railway, at St. Louis, Mo., has been appointed assistant general freight agent, with headquarters at St. Louis, and C. F. Lauer, freight soliciting agent, at St. Louis, succeeds Mr. Hannigan.

F. M. Steele, commercial agent of the Fort Dodge, Des Moines & Southern at Des Moines, Iowa, has been appointed assistant general freight and passenger agent, with headquarters at Chicago, succeeding Ted W. Krein, resigned. Charles W. Welch succeeds Mr. Steele.

R. B. Robertson, general agent of the Chicago, Indianapolis & Louisville at Chicago, has been appointed division freight agent with headquarters in that city, and the former position is abolished. Henry Warner, assistant general agent at Chicago, has been appointed commercial agent at that point, and the former position is abolished.

Engineering and Rolling Stock

D. M. Neer has been appointed roadmaster of the Missouri, Kansas & Texas at Smithville, Tex., succeeding A. B. Crook, resigned.

D. E. Barton has been appointed acting master mechanic of the Atchison, Topeka & Santa Fe, with headquarters at Argentine, Kan., in place of E. E. Machovec.

H. Selfridge, general foreman of the Oregon Short Line, at Salt Lake City, Utah, has been appointed master mechanic of the Nevada Northern, with headquarters at East Ely, Nev.

J. H. Cooper, assistant supervisor of the Pennsylvania Railroad, at Tyrone, Pa., has been appointed assistant supervisor of division No. 2 Philadelphia division, with office at Paoli, succeeding F. H. Bentley, promoted.

W. C. Burel, district foreman of the Oregon Short Line, at Montpelier, Idaho, has been appointed general foreman of the Utah district, Utah-Montana division, with headquarters at Salt Lake City, Utah, succeeding H. Selfridge.

T. W. Fatherson, assistant engineer of the Rock Island Lines at El Reno, Okla., has been appointed engineer maintenance of way of the Chicago Great Western, with headquarters at Des Moines, Iowa, succeeding C. Millard, resigned.

J. W. Fletcher, roadway superintendent of the Carolina & North Western, at Chester, S. C., has been appointed engineer in charge of valuation, construction, betterment, inspection, tests and standards, with headquarters at Chester, and his former position has been abolished.

H. G. Sparks, division engineer of the Chicago & Eastern Illinois at Evansville, Ind., has been appointed division engineer at Salem, Ill., succeeding J. W. Hunter, who has been transferred to Danville, Ill., as division engineer in place of W. A. Van Frank, resigned. C. Brannon, assistant division engineer at Chicago, succeeds Mr. Sparks at Evansville.

The following officers of the Lake Shore & Michigan Southern, which is now consolidated with the New York Central Railroad, have had their jurisdiction extended over the Illinois division of the New York Central, formerly the Chicago, Indiana & Southern: Robert O. Rote, assistant chief engineer, Cleveland, Ohio; H. B. Reinsagen, principal assistant engineer, Cleveland; B. R. Leffler, bridge engineer, Cleveland, and F. B. Wiegand, signal engineer, Cleveland.

OBITUARY

John B. Gillett, formerly general freight agent of the Boston & Maine, until about 1871, died on February 2, at his home at Malden, Mass., at the age of 85.

Ellery S. Allen, formerly for many years general agent of the Cromwell Steamship Company, at New York, died of pneumonia on January 31, at his home in New York, at the age of 78. Mr. Allen retired from active work in 1907.

Equipment and Supplies

LOCOMOTIVE BUILDING

THE FRENCH GOVERNMENT has ordered 7 locomotives from the Baldwin Locomotive Works.

THE GRAND RAPIDS & INDIANA has ordered three Mikado type locomotives from the Lima Locomotive Corporation.

THE CHICAGO, BURLINGTON & QUINCY is in the market for from 30 to 35 freight locomotives and 15 passenger locomotives.

THE LOUISIANA RAILWAY & NAVIGATION COMPANY has ordered 3 ten-wheel locomotives from the Baldwin Locomotive Works.

THE ILLINOIS CENTRAL has ordered 25 Mikado type locomotives from the Lima Locomotive Corporation in addition to the 25 similar locomotives ordered of the same company, reported in the *Railway Age Gazette*, January 8, and 25 switching locomotives ordered of the American Locomotive Company and reported in the issue of January 1.

CAR BUILDING

THE CHICAGO, BURLINGTON & QUINCY is in the market for 1,200 box cars, 300 stock cars and 200 gondola cars.

THE BALDWIN LOCOMOTIVE WORKS is figuring on several inquiries for a large number of trucks for export.

THE ILLINOIS CENTRAL has ordered 900 40-ft. 40-ton capacity refrigerator cars from the American Car & Foundry Company.

THE GRAND TRUNK is building five freight cars in its shops at Chicago. These cars will replace some that were recently destroyed.

THE RICHMOND, FREDERICKSBURG & POTOMAC is reported to be preparing specifications for six all steel passenger cars. This item has not been confirmed.

THE PENNSYLVANIA TANK CAR COMPANY has received an order for 50 10,000 gal. capacity and 50 8,000 gal. capacity tank cars for an Oklahoma oil producer.

THE SIAMESE ROYAL RAILWAY DEPARTMENT invites bids for 40 bogies (trucks) and frames and fittings for 20 railway carriages, and for one steel bridge, 5 by 40 M.; separate specifications and drawings may be had from the Siamese Legation, Washington, D. C., upon payment of fees of \$4 or \$2 respectively.

IRON AND STEEL

THE SIAMESE ROYAL RAILWAY DEPARTMENT.—See item above under Car Building.

THE CHICAGO & NORTH WESTERN has ordered 27,000 tons of steel rails from the United States Steel Corporation.

THE SOUTHERN PACIFIC is said to have ordered 30,000 tons of rails from the Tennessee Coal, Iron & Railroad Company.

THE ERIE has ordered 22,000 tons of steel rails from the Carnegie Steel Company, 6,000 tons from the Illinois Steel Company, and 2,000 tons from another manufacturer.

THE DENVER UNION TERMINAL RAILWAY COMPANY has ordered 152 tons of steel for its approach to the Twentieth street viaduct, Denver, Colo., from the Patterson Burkhardt Company.

THE SEATTLE TERMINAL COMPANY has ordered 292 tons of steel for its building at Seattle, Wash. The order was divided between the National Steel Construction Company, the Vulcan Iron Works and the N. & S. Foundry Company, all of Seattle.

SIGNALING

The Federal Signal Company has taken an order for the material for a mechanical interlocking plant on the Wilkes Barre Connecting Railroad, at Wilkes Barre, Pa.; 29 working levers and 3 spare spaces.

Supply Trade News

Leonard W. Kent, formerly eastern sales agent of The P. & M. Company, with offices in New York, died suddenly at his home in Westwood, N. J., on January 24.

The Hewitt Company, Chicago, Ill., has succeeded to the business and assumed the contract obligations of the Hewitt Supply Company, effective January 1, 1915. C. M. Hewitt is president.

C. B. McElhany, assistant general manager of sales of the Cambria Steel Company, has been appointed general manager of sales, succeeding J. Leonard Replogle, who has resigned to enter the service of the American Vanadium Company.

Effective February 15, the Cleveland office of the Ayer & Lord Tie Company, Chicago, Ill., at 801 Swetland building, will be placed in charge of B. S. McConnell, who will succeed F. A. Weaver, resigned. R. W. Slaney will succeed Mr. McConnell in Chicago territory.

James S. Llewellyn has been elected secretary, and Paul Llewellyn treasurer of the Chicago Malleable Castings Company. James S. Llewellyn will continue to hold the office of works manager at the West Pullman works.

J. Leonard Replogle, vice-president and general manager of sales of the Cambria Steel Company, since September, 1912, has resigned, effective March 1, to accept the position of vice-



J. L. Replogle

president and general manager of sales of the American Vanadium Company. Mr. Replogle has been in the service of the Cambria Steel Company for approximately 26 years. He was born in Bedford County, Pa., on May 6, 1876, and was educated in the public schools of Johnstown. He entered the employ of the Cambria Steel Company as an office boy when he was but 13 years of age and served successively as clerk, shipper, assistant superintendent of the axle department, superintendent of the forge, axle and bolt departments, assistant to the assistant general manager, super-

intendent of the order department, assistant general manager, assistant to president, and vice-president and general manager of sales. In his new position Mr. Replogle will have offices at New York and Pittsburgh.

H. Bortin, formerly engineer in charge of the valuation department of the Union Pacific and a member of its valuation committee for four years, and lately assistant to the general secretary of the Presidents' Conference Committee on Federal Valuation of the Railroads, has opened an office as consulting valuation engineer, at 149 Broadway, New York City.

Charles E. Poyer has been appointed assistant general sales manager of the Edison Storage Battery Company, Orange, N. J. Mr. Poyer has been with the Edison interests for about four years, having served first on the personal engineering staff of Mr. Edison in the development of special applications of the alkaline battery, and later as assistant advertising manager. For the past two years he has been manager of the house lighting department.

The corporate name of the W. W. Herron Lumber Company, Mobile, Ala., has been changed to the Walker-Johnstone Lumber

Company, Inc., effective February 1. The officers of the company will be R. D. Walker, president; C. A. L. Johnstone, vice-president and treasurer, and D. R. Forman, secretary. This company has specialized since 1902 in furnishing yellow pine railroad tie and car material to the railroads and car companies. There will be no change whatever in its policy.

Lyndon F. Wilson, vice-president of the Railway List Company, Chicago, has resigned to become vice-president of the Bird-Archer Company, New York, effective April 1, 1915. Mr. Wilson was born at Rush Lake, Wis., November 4, 1883. He was educated at Ripon College, Lawrence University, and the University of Wisconsin. Before entering college, however, he was an operator in the office of his father on the Chicago, Milwaukee & St. Paul. Later, after having had considerable machine shop and power plant experience, he became an engineer in the Department of the Interior of the United States government, after having passed examinations in steam, electricity and heating and ventilating. After one year in this service, he joined the engineering department of the Western Electric Company, and remained with the latter until the fall of 1908, when he became mechanical department editor of the *Railway Review*. In the spring of 1909 he became editor of the *Railway Master Mechanic*, and was subsequently given editorial charge of *Railway Engineering*, both being published by The Railway List Company, Chicago. He was promoted to the vice-presidency of this company in the summer of 1913. After April 1, Mr. Wilson will be located in the Chicago office of the Bird-Archer Company.

J. A. McFarland has been appointed southwestern district manager of the Bird-Archer Company, Chicago, with headquarters in the Frisco building, St. Louis, Mo. Mr. McFarland was born on October 23, 1880, at Mendota, Ill. After finishing his common school education he entered the University of Illinois, from which he graduated in 1903, having specialized in chemistry. He began railway work in May of the same year in the chemical department of the Atchison, Topeka & Santa Fe, at Topeka, Kan. On January 1, 1904, he became assistant in the testing department of the Chicago & North Western. In February, 1905, he became chief chemist of the Missouri Pacific, in which position he remained until May, 1909, when he took charge of the St. Louis office of the Dearborn Chemical Company, Chicago, looking after the latter's railroad business in that territory. In July, 1911, he left that company to become chemist and engineer of tests of the Frisco System, and was later connected with the Standard Railway Equipment Company, New Kensington, Pa., until his recent appointment to the position of southwestern district manager of the Bird-Archer Company, as above noted.



L. F. Wilson



J. A. McFarland

The Canadian Car & Foundry Company, Ltd.

Although the declaration of war did not have a relatively great effect on the operation of the Canadian Car & Foundry Company, Ltd., for the fiscal year ended September 30, 1914, the combined output of this company and its associated companies, the Canadian Steel Foundries, Ltd., the Pratt & Letchworth Company, Ltd., and the Rhodes, Curry Company, Ltd., was approximately \$11,000,000 in value as compared with \$27,000,000 for the previous fiscal year, a reduction of no less than 59 per cent.

The combined profit, after charging all expenditures for the maintenance and renewal of plant and equipment was \$673,036. From this there was deducted provisions for depreciation and bond sinking funds of \$278,077, leaving a total of \$394,959. Interest on bonds was \$556,205, and there was deducted from the latter amount \$95,437 charged to property account and representing interest on the cost of construction of the new Fort William plant, thus leaving a total of \$460,768. There was, therefore, a deficit for the year, after the payment of bond interest, of \$65,809. The combined surplus of the associated companies on September 30, 1913, was \$2,224,579, thus leaving a surplus available for dividends of \$2,158,770. Dividends of \$526,500 were paid, so that the surplus on September 30, 1914, was \$1,632,270.

The associated companies now have capital assets, including real estate, buildings, machinery, patents and good will of \$19,297,122; \$1,012,859 having been added during the year chiefly by the expenditure on the Fort William works. The current assets amounted on September 30 to \$5,920,748, of which \$3,245,710 was inventory of manufactured and partly manufactured products, materials and supplies, and \$163,855 cash. The company's capital stock is now \$10,975,000, and there are bonds outstanding of \$9,303,429. The current liabilities on September 30 amounted to \$1,595,187, of which \$706,593 was accounts and bills payable.

The annual report is published in an unusually attractive manner and contains several views of freight and passenger cars turned out at the various works.

TRADE PUBLICATIONS

CHICAGO, ROCK ISLAND & PACIFIC.—The passenger department has issued a 48-page folder containing numerous illustrations showing points of interest at both San Francisco and San Diego, in connection with the Panama expositions. It describes these places as well as telling how to reach them.

PORTABLE MACHINE TOOLS.—The Pedrick Tool & Machine Company, Philadelphia, Pa., is now distributing its 1915 catalog of portable machine tools. The catalog contains views and illustrations of portable cylinder boring bars, portable turning machines, milling machines, pipe bending machines, etc.

TOOLS.—The Verona Tool Works, Pittsburgh, Pa., has issued catalog No. 11, a 64-page book, devoted to the description and illustration of its various forms of track tools. It also shows a view of the laboratory where each lot of steel is analyzed. The illustrations clearly show the detail of construction of the tools.

TELEPHONES.—The Western Electric Company, New York, has issued a folder containing an article entitled "The Transcontinental Voice Highway" describing the opening of the direct connection by long-distance telephone between New York and San Francisco on January 25, together with a brief history of the development of long-distance telephone operation in this country.

CURTAIN FIXTURES.—Bulletin No. 182, issued by the Dayton Manufacturing Company, Dayton, Ohio, describes and illustrates the Dayton curtain for railway car windows. This curtain is fitted with friction shoes bearing in grooves which hold the curtain in position and retaining strips prevent accidental displacement. A guide for convenience in ordering is given on the last page.

HOISTS AND DERRICKS.—The Minneapolis Steel & Machinery Company, Minneapolis, Minn., has issued a 110-page catalog which illustrates and describes fully the design and construction of the various types of Twin City hoists and the machinery necessary for their operation. The book also describes the construction and action of various kinds of coal hoisting and dredging buckets, pile drivers, grab hooks, etc.

Railway Construction

CAROLINA & YADKIN RIVER.—Surveys are to be started soon, it is said, for an extension to be built from Denton, N. C., southwest to Troy, about 25 miles.

GRASSE RIVER.—This company has track laying finished on a line from Childwold, which is on the New York Central, in St. Lawrence county, N. Y., west via Conifer to Cranberry Lake, about 15 miles. The maximum grade is 2.3 per cent, and maximum curvature 14 deg. The company expects to develop a traffic in lumber, wood products and general merchandise on the new line. The organization of the company has not yet been completed. William T. Turner, Utica, N. Y., is interested.

JELICO COAL & RAILROAD.—Surveys are being made, it is said, for the line projected last year from a point near Pine Knot, Tenn., on the Queen & Crescent Route, to Jellico, about 20 miles. There are to be two tunnels and three small bridges on the line. W. E. Wheelock, superintendent of terminals of the Cincinnati, New Orleans & Texas Pacific at Chattanooga, Tenn., is president of the new company, and D. C. Barker, chief engineer, Jellico. (September 18, p. 549.)

MEXICAN ROADS.—Plans have been made by a syndicate of Americans to build a railroad in the state of Puebla to provide an outlet for coal that was recently discovered in the southern part of the state. The syndicate has bought the coal deposits, and it is said will spend about \$4,000,000 gold in developing the property and constructing the proposed railroad. The line is to be built from Zautla to a connection with the Teziutlan branch of the Interoceanic Railroad.

Official announcement is made at the City of Mexico of the cancellation by the Conventionist government of Mexico of the concession granted to a Belgian syndicate for the construction of an extensive system of railways to cost about \$40,000,000. Considerable preliminary work had already been carried out and some of the routes had been surveyed. The cancellation of the concession was made upon the application of the syndicate, it is said, as present conditions in Belgium make it impossible for the contract to be fulfilled.

OCILLA SOUTHERN.—Work is to be started soon, it is said, on the extension which was projected over a year ago from the present northern terminus of the road at Rochelle, Ga., north to Macon, about 80 miles. The company has secured an amendment to its charter, and the stockholders have acted favorably upon a proposed increase in capital stock of from \$1,000,000 to \$3,000,000.

OTTAWA & ST. LAWRENCE ELECTRIC.—This company was organized in 1912, to build 275 miles of electric railway in eastern Ontario out of Ottawa. Contracts for some of the work have been let, it is said, and work will be started next spring on the section between Perth and Smith's Falls, about 15 miles. H. W. Pearson, Confederation Life building, Toronto, is secretary. (December 18, p. 1166.)

SOUTH CAROLINA ROADS.—Under the name of the North Charleston Corporation, plans are being made, it is said, to build a belt line to connect North Charleston industrial plants with the yards of the Southern Railway, the Atlantic Coast Line and the Seaboard Air Line. R. G. Rhett, president, Charleston.

Right of way has been secured, it is said, to build a line from timber lands on the Congaree river to a point near Columbia, S. C., 12 miles. J. C. Brewerton, Fayetteville, N. C., is back of the project.

WAUSHARA COUNTY.—An officer writes that work on the construction of the proposed line between Red Granite, Wis., and Poyssippi will be begun as soon as the frost leaves the ground.

RAILWAY STRUCTURES

DALLAS, TEX.—The Stone & Webster Engineering Corporation is preparing plans for the construction of extensive terminal facilities for its interurban railway system.

MACON, GA.—An officer of the Central of Georgia writes that the contract entered into with the city officers of Macon, for the construction of the union station at Macon is only a preliminary step. No detail plans for the station or for other improvements have as yet been made. The company has not yet decided when bids for this work will be asked for, or when construction work will be started. (January 29, p. 212.)

NEW ORLEANS, LA.—The Louisiana Railway & Navigation Company has negotiations under way for the building of a large grain elevator on the river front.

PATERSON, N. J.—An officer of the Erie writes that nothing definite has been determined upon to carry out the removal of 15 grade crossings on the Erie in Paterson. The Board of Public Utilities Commissioners recently acted favorably on the application of the city officers of Paterson for the elimination of these grade crossings.

PEN ARGYL, PA.—An officer of the Lehigh & New England writes that contract for a new shop and storehouse to be built at Pen Argyl has been let to F. D. Hyde, New York City. The shop will be a one story structure 164 ft. 9¼ in. by 264 ft. outside dimensions, and the machinery will be operated by electricity. The shop will have steel columns, roof trusses and purlins, reinforced cinder concrete roof slabs, waterproof roof covering, steel sash, concrete foundations and Natco hollow tile walls with stucco covering; the storehouse will be 40 ft. by 150 ft., and there will be a boiler house 34 ft. by 40 ft., and an oil house 20 ft. by 21 ft. The contract also includes a foundation 40 ft. 7 in. by 310 ft. for a transfer table. The work will probably be started early in February, and will cost about \$95,000.

PITTSBURGH, PA.—An officer of the Baltimore & Ohio writes that bids have been asked for building a steel viaduct 1,900 ft. long, which will be 35 ft. at its greatest height, to cost about \$700,000. The improvement is being carried out to eliminate the grade crossing at Liberty avenue and Thirty-third street, Pittsburgh.

SALT LAKE CITY, UTAH.—The San Pedro, Los Angeles & Salt Lake has submitted plans to the city council for a proposed new passenger station to be built on Seventh street. The building is to be 90 ft. by 162 ft., and two stories high, and is to be of reinforced concrete construction. The company will file formal application for permits and privileges at once, and states that the building will be completed in six months. The estimated cost is \$260,000.

GUATEMALA AND SOUTHERN MEXICO.—It is reported that the Guatemala Central has been extended westward to Mariscal on the Pan-American, on the border line between Guatemala and Mexico; but it is expected that several months must elapse before through traffic can be established between the two countries, because of the disturbances caused by the revolutionists. Depredating bands have recently destroyed bridges along the line of the Pan-American and have torn up long stretches of track. The line between the Tehuantepec Railroad and Vera Cruz is also in bad shape and no regular through trains are being run.

THE NEEDS OF THE RAILWAYS OF NEW ZEALAND.—The new general manager of the New Zealand State Railways has recently made a report on the organization and equipment of the system, in which there are proposed a large number of important changes. The erection of new locomotive construction works is contemplated at Newmarket, and the standardization of engine types and the abolition of the small type of engine hitherto extensively used on the New Zealand railways is engaging attention. Among other contemplated changes and extensions the following may be briefly indicated: rail motor service for suburban traffic in the larger cities; substitution of electric lighting for gas on main through trains; reorganization of the present system of car cleaning; extension and re-modeling of existing building and repair shops, and the erection of new stations. The various improvements entail a total estimated expenditure of \$16,250,000 spread over a period of five years and comprise: terminals, \$7,850,000; double tracking, \$2,425,000; grade elimination, \$1,250,000; new engine house and approach lines at Auckland, \$700,000; additions to shops, \$300,000; new lines, \$1,875,000; signaling and interlocking, \$1,250,000; warning signals for grade crossings, \$100,000; bridge strengthening, \$250,000, and 10 new locomotives, \$250,000.

Railway Financial News

CHICAGO, ROCK ISLAND & PACIFIC.—A suit has been filed in the New York Supreme Court by the First National Bank of Ridgefield, N. J., the People's National Bank of Hackensack, N. J., N. L. Amster, of Boston, and nine other stockholders of the Chicago, Rock Island & Pacific Railway Company to recover from the directors of the company of December, 1909, \$7,500,000 alleged to have been unlawfully paid out by the Railway company. The specific grounds for the suit are the allegations that in December, 1909, the Railroad company—the Iowa holding company—sold \$28,940,300 stock of the St. Louis & San Francisco, held as collateral under \$17,364,180 bonds of the Railroad company, for 37.50 per cent of par, an aggregate of \$10,852,612, and that in order to release the collateral it was necessary for the Railroad company to raise \$7,500,000 in cash in addition to the proceeds of the sale of the collateral. The individual defendants being in control of the Railroad company, the complainant alleges, and being heavily interested in the stock of the New Jersey company, caused the Railway company to borrow \$7,314,661 and to pay \$185,339 as expenses of raising the money and to turn over the \$7,314,661 to the Railroad company in exchange for \$7,500,000 5 per cent unsecured debenture bonds, and that this purchase by the Railway company was fraudulently and unlawfully accomplished. The individual directors named are D. G. Reid, Richard A. Jackson, H. S. Cable, F. L. Hine, Ogden Mills, G. G. McMurtry, W. T. Graham, W. H. Moore, G. T. Boggs, E. S. Moore, J. J. Mitchell, J. H. Moore and H. U. Mudge.

Another suit has been filed against individual directors by Sadie E. Hiddon in behalf of herself "and other bondholders" to recover sums claimed to have been paid as campaign contributions and in excessive salaries.

D. G. Reid has resigned as a director of both the Railway company and the holding company, and E. S. Moore, Roberts Walker and John J. Mitchell, whose terms expire this year, have announced that they do not seek re-election.

ERIE.—This company has notified the New York Public Service Commission that an offer had been received from J. P. Morgan & Co., to purchase \$13,000,000 bonds of the Erie & Jersey and the Genesee River Railroads, roads owned by the Erie, at 98½ per cent and 97½ per cent, provided an increase on the interest of the bonds from 4 to 6 per cent is approved by the commission. These 4 per cent bonds are now pledged as security for the Erie's short term notes, which it sold in 1905, when the two railroads were incorporated and the lines constructed to reduce grades of 1 per cent to grades of ⅓ per cent, so that the Erie might compete with other trunk lines. The offered price, is net and without commission.

EVANSVILLE & INDIANAPOLIS.—The protective committee representing the first mortgage 6 per cent bonds of 1924 and the first consolidated mortgage 6 per cent bonds of 1926, of which Frederick H. Shipman, treasurer of the New York Life Insurance Company, is chairman, has fixed February 15 as the last day on which bonds can be deposited with the Farmers' Loan & Trust Company as depository for the committee.

ILLINOIS CENTRAL.—The company has sold to Kuhn, Loeb & Company, New York, \$10,000,000 Illinois Central and Chicago, St. Louis & New Orleans division joint first refunding 5 per cent bonds.

NEW YORK CENTRAL RAILROAD.—Judge Hough, in the United States district court, has upheld the complaint of John Scott Boyd, Jr., representing certain minority stockholders of the New York & Harlem, preventing the merger of the New York & Harlem with the New York Central & Hudson River. The following is a brief abstract of the decision:

(1) That the New York Central desires and intends to consolidate with the New York & Harlem.

(2) That this consolidation would be a violation of the contract rights of the minority stockholders of the Harlem Company, and that such stockholders are entitled to an injunction restraining consolidation during the term of the lease of 1873, namely, until the year 2274.

(3) That no testimony is necessary to establish the right of

the minority stockholders to such an injunction, but that they are entitled now to an injunction during the pendency of the action and will become entitled to a permanent injunction at the trial, or by waiving the additional claims made in the complaint, the minority stockholders will become entitled now to a permanent injunction restraining the consolidation.

(4) The allegations of the plaintiffs to the effect that the control of the Harlem road by the Central is a violation of the Sherman act sets forth a good cause of action which, if proven, may entitle the plaintiffs to additional relief in order to maintain the present status and prevent any increase of the existing illegal control until such time as the attorney-general chooses to act.

Justice Keogh has denied the Continental Securities Company an injunction to restrain the merger of the Lake Shore and the New York Central on the ground of the issue of 4 per cent bonds in place of 3½ per cent bonds. Justice Keogh holds that this does not violate the New York Public Service Commission law.

NEW YORK, NEW HAVEN & HARTFORD.—A bill is to be introduced into the Rhode Island legislature providing that the New York, New Haven & Hartford be permitted to issue preferred stock, and it is said that a similar bill will be introduced in the Connecticut general assembly. President Elliott is quoted in the Providence Journal as saying:

"One very desirable method of raising the money needed [to refund maturing short term indebtedness] would be for the stockholders to buy new issues of common or preferred stock. . . . The showing made by the property and the complications surrounding it during the past two years are such that an increase of common stock at this time is out of the question.

"The issue of preferred stock is a desirable method when practicable, but it is not clear that the right exists under the present law. . . . It is now important, therefore, to have the laws made clear so that steam railroad companies can issue preferred stock as a means of raising money if market conditions justify.

"Although there are no mortgage bonds outstanding on the main line of the railroad from New York to Providence, and from New Haven to Springfield, except \$750,000 between New London and Providence, nevertheless the company cannot pay its obligations by an issue of bonds secured by a mortgage because of limitations and conflicts in the laws of the states of Massachusetts, Rhode Island and Connecticut. Massachusetts permits the issue of a mortgage to twice the amount of capital stock and premiums actually paid in, while Connecticut limits the amount of mortgage to one-half the amount actually expended on the railroad. Under this limitation no mortgage could be issued which would take care of the outstanding obligations necessary to be included, to say nothing of the floating debt and additional necessities of the railroad. As the general laws of Rhode Island do not specifically authorize railroad mortgages, there is some doubt of the New Haven's right to mortgage property in that state.

"Under existing Massachusetts laws any mortgage made by the New Haven company must secure the bonds of other railroad companies now a part of the New Haven system, which are already amply secured by first mortgages on the property of those roads and manifestly should not have the additional security of any mortgage on the now unmortgaged main line of the New Haven.

"Doubt exists as to the actual amount of outstanding capital stock recognized by the state of Massachusetts, owing to the fact that when the New Haven securities were validated by the report of the validation commission in 1911, a stock issue was authorized and subscribed for, but only paid in part, and only the amount then paid in was validated. Legislation to validate the total amount paid in is obviously necessary."

PENNSYLVANIA RAILROAD.—The offering price to the public of the \$49,000,000 consolidated (now first) mortgage bonds which Kuhn, Loeb & Company, New York, bought from the Pennsylvania was 103¾, yielding approximately 4.31 per cent on the investment. The issue was subscribed for five times over.

The Pennsylvania has asked the New Jersey Board of Public Utility Commissioners for permission to take over the Philadelphia & Long Branch, the Pemberton & Hightstown and the Kinkora & New Lisbon. These are branch lines which the Pennsylvania owns and has been operating.